State of Hawaii
2018
Air Monitoring Network Plan

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Acronyms and Definitions

AADT	Annual Average Daily Traffic
AQI	Air Quality Index
AQMS	Hawaii Department of Health Air Quality Monitoring Section
AQS	Environmental Protection Agency Air Quality System
BAM	Beta-Attenuation Mass Monitor
CAB	State of Hawaii Department of Health Clean Air Branch
CBSA	Core-Based Statistical Areas
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DOH	Hawaii State Department of Health
DOT	Hawaii State Department of Transportation
DRR	Data Requirements Rule
ECA	(North American) Emissions Control Area (Maritime)
EPA	United States Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
H_2S	Hydrogen Sulfide
HECO	Hawaiian Electric Company
IMPROVE	Integrated Monitoring of Protected Visual Environments
LERZ	Kilauea Volcano Lower East Rift Zone
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
MWC	Municipal Waste Combustor
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multi-pollutant Monitoring Stations
NEI	National Emissions Inventory
NO_2	Nitrogen Dioxide
O_3	Ozone
Pb	Lead
PGV	Puna Geothermal Ventures
$PM_{2.5}$	Particulate matter less than or equal to 2.5 microns in aerodynamic diameter
PM_{10}	Particulate matter less than or equal to 10 microns in aerodynamic diameter
$PM_{10-2.5}$	Particulate matter coarse
PQAO	Primary Quality Assurance Organization
PPB	Parts per billion
PPM	Parts per million
PSD	Prevention of Significant Deterioration
PWEI	Population Weighted Emissions Index
QC	Quality Control
SLAMS	State and Local Air Monitoring Stations
SLD	State Laboratories Division
SO_2	Sulfur Dioxide
SPM(S)	Special Purpose Monitoring (Stations)
STN	Speciation Trends Network
TPY	Tons per Year
TSP	Total suspended particulates
VOG	Haze due to volcanic emissions
WD	Wind direction
WS	Wind speed
$\mu g/m^3$	micrograms per cubic meter of air

Introduction

The State of Hawaii Department of Health (DOH) plans, operates and maintains the statewide ambient air quality monitoring network. Monitoring data is used for a variety of reasons including determining compliance with National Ambient Air Quality Standards (NAAQS), timely reporting of the U.S. Environmental Protection Agency's (EPA) Air Quality Index (AQI), tracking and characterizing air quality trends, evaluating emission control strategies, and supporting health studies.

The DOH manages all of the State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitoring Stations (SPMS), and the National Core Multi-pollutant Monitoring Station (NCore). Additionally, Hawaii has two Interagency Monitoring of Protected Visual Environments (IMPROVE) stations located at Haleakala National Park on Maui and Volcanoes National Park on the island of Hawaii. The IMPROVE stations are operated and maintained by the National Park Service through their federal land management agency. DOH is also overseeing two ambient air stations on the island of Oahu that are operated by Hawaiian Electric Company (HECO) to meet the Data Requirements Rule (DRR).

This annual review evaluates the state's existing ambient air monitoring network to determine adequacy in meeting monitoring objectives, optimizes the network by closing, moving or adding stations, and ensures that air quality issues important to the state are being addressed. The review ensures that the network is providing adequate, quality assured and useful data to meet the needs of stakeholders. This plan encompasses the 18-month period from July 1, 2018 through December 31, 2019. However, unplanned modifications may occur due to funding reductions, unanticipated site changes, or changes in EPA monitoring requirements. This plan is being submitted to the EPA Region 9 according to the Code of Federal Regulations (CFR), Title 40, Part 58, Section 58.10.

Notification of the plan availability for public inspection was provided through public notices published on May 28, 2018 in the daily newspapers of all counties. The plan was available for review at all county District Health offices as well as on the Clean Air Branch website, http://health.hawaii.gov/cab, for 30 days from May 28, 2018 to June 27, 2018. Documentation of public notification is provided in **Appendix A**. No comments were received.

1.0 Network Purpose and Design

1.1 Overview

EPA established NAAQS for the following criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), particulate matter 10 microns or less in aerodynamic diameter (PM_{10}) and particulate matter 2.5 microns or less in aerodynamic diameter ($PM_{2.5}$). Additionally, there is a state standard for hydrogen sulfide (H_2S) that was established primarily to monitor the ambient air effects of geothermal energy production activities on the island of Hawaii. In 2011 the state established the NCore station as required by 40 CFR 58. The NCore station monitors for $PM_{2.5}$, speciated $PM_{2.5}$, particulate matter coarse ($PM_{10-2.5}$), O_3, SO_2, CO, Pb, nitrogen oxides ($NO/NO_2/NO_y$) and the meteorological parameters wind speed, wind direction, ambient temperature and relative humidity. Hawaii's air quality surveillance network consists of compliance stations monitoring for criteria pollutants as well as the NCore station and special purpose monitoring stations.

The annual review ensures that the state meets monitoring and siting requirements, the three basic monitoring objectives, addresses the six site types in 40 CFR 58 Appendix D, provides information for non-regulatory data goals and the requirements of 40 CFR 58 appendices A, C, D, and E as follows:

- *Appendix A: Quality Assurance Requirements for SLAMS, SPMSs and PSD Air Monitoring;*
- *Appendix C: Ambient Air Quality Monitoring Methodology*
- *Appendix D: Network Design Criteria for Ambient Air Quality Monitoring*
- *Appendix E: Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring*

1.1.1 SLAMS

SLAMS are established primarily to demonstrate compliance with the NAAQS, and to meet minimum monitoring requirements as required in 40 CFR 58 Appendix D. All SLAMS must meet quality assurance, methodology, and siting requirements of 40 CFR 58 Appendix A, C and E, respectively. All data is submitted to EPA's Air Quality System (AQS) within 90 days at the end of each calendar quarter, as required in 40 CFR 58.16.

EPA mandated that each state establish a minimum of one NCore station to support tracking of long-term trends of criteria and non-criteria pollutants, model evaluation, long-term health and ecosystem assessments, and other scientific and technological studies. Hawaii's NCore station became fully operational on January 1, 2011. The SLAMS network excludes SPMS but includes NCore and other stations that have not been specifically designated as SPMS.

1.1.2 SPMS

SPMS are operated for specific areas of interest to the state and do not count in meeting minimum monitoring requirements. Hawaii's SPM network is established primarily to monitor air quality impacts of emissions from the ongoing Kilauea

volcano eruption, hydrogen sulfide (H_2S) emissions from geothermal energy production and impacts from cruise ships on the island of Kauai. The DOH utilizes Federal Reference Method (FRM) or Federal Equivalent Method (FEM) analyzers for all criteria SPMS, meets the quality assurance requirements of 40 CFR 58 Appendix A and E, and submits criteria pollutant data to AQS. All data from SPMS which have operated for more than 24 months is eligible for comparison to relevant NAAQS.

1.2 Network Design and Review Process

The network review determines if: modifications are needed to reduce or eliminate redundancy and low value monitoring; new NAAQS monitoring requirements or programs are met; sufficient data is being collected using the best technology and schedule that resources allow; and corrective actions are needed to ensure compliance with all siting and quality assurance requirements.

Modification decisions are made using a variety of tools, including but not limited to: data trend analyses; performance and technical systems audits; regular site inspections; cost and value analyses; assessment of unfavorable site changes such as loss of lease or construction that adversely affect data collection; and the need to address special studies or new regulatory as well as non-regulatory monitoring objectives.

1.2.1 Monitoring Objectives and Site Types

Ambient air monitoring networks must be designed to meet three basic objectives as stated in 40 CFR 58 Appendix D:

1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with NAAQS and emissions strategy development; and
3) Support air pollution research studies.

The state's ambient air monitoring network achieves all three objectives as follows:

1) Air pollution data from all SLAMS and SPMS are exhibited near real-time on the DOH public web-site. Additionally, continuous $PM_{2.5}$ and O_3 data is provided to EPA's AIRNow website for use in calculating the AQI;
2) Data from SLAMS are used to demonstrate compliance with the NAAQS and in development and tracking of emissions control strategies. Similarly, data from the NCore station is used to demonstrate compliance with the NAAQS and to track long-term trends of criteria and non-criteria pollutants as well as support emissions control strategies;
3) All SLAMS, SPMS, and NCore monitoring provide valuable information in support of air pollution, health and other scientific studies.

In order for the network to support the three basic objectives outlined above, it must be designed with a variety of monitoring site types. The six general site types are:

1) Determine the highest pollutant concentrations expected in the network;
2) Measure typical concentrations in areas of high population density;
3) Determine the impact of significant sources or source categories on air quality;
4) Determine general background concentrations;
5) Determine the extent of regional pollutant transport between populated areas;

6) Measure pollution impacts on visibility, vegetation, crops, animals and buildings.

The site type for each station in the network is included in its detailed description in Section 3.0 of this document.

1.2.2 $PM_{2.5}$ Network Changes

According to 40 CFR 58.10 (c), this network plan must document how the state will provide for a review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor or the creation or change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual $PM_{2.5}$ NAAQS as set forth in Part 50 Appendix N. The agency must also document the process for obtaining public comment and include any comments received through the public notification process within the submitted plan.

The state does not have, nor is intending to create, any community monitoring zones and does not utilize spatial averaging for comparison to the $PM_{2.5}$ NAAQS. The state has in place a public notification procedure which includes posting notice in the newspapers of all counties and on the agency web site allowing for public viewing and comments of the changes that are in the annual network plan document.

1.3 Organizational Structure and Responsibilities

The DOH Clean Air Branch (CAB) is the state agency responsible for planning, management, and regulatory activities associated with the state's air program. The CAB serves as the Primary Quality Assurance Organization (PQAO) with two separate branches within the DOH responsible for quality assurance oversight and data collection.

The CAB is responsible for the overall quality assurance management of the ambient air monitoring program, is organizationally independent of data generation activities and provides quality assurance oversight of the Air Quality Monitoring Section (AQMS) of the State Laboratories Division (SLD). The AQMS is responsible for all data generation activities including operating and maintaining the stations and providing quality assured data to AQS. The AQMS also provides laboratory support for chemical and mass analyses of special or research air toxics monitoring as needed and $PM_{2.5}$ co-located and Pb total suspended particulate (TSP) filter samples.

2.0 Network Evaluation

There are minimum monitoring requirements for PM_{10}, $PM_{2.5}$, O_3, SO_2, and Pb for each Metropolitan Statistical Area (MSA) in the state as described in 40 CFR 58 Appendix D. In 2013, the U.S. Office of Management and Budget designated two MSAs in the State of Hawaii, Urban Honolulu and Kahului-Wailuku-Lahaina (Maui County, excluding Kalawao County). The 2010 census population was 953,207 for the Urban Honolulu MSA (hereafter called Honolulu) and 154,834 for the Kahului-Wailuku-Lahaina MSA (hereafter called Maui). There are five counties in the state: Kauai (islands of Niihau and Kauai); City & County of Honolulu (island of Oahu); Maui (islands of Maui, Molokai, Lanai, Kahoolawe, excluding Kalawao County); Kalawao (Kalaupapa Settlement on Molokai) and Hawaii (island of Hawaii).

2.1 PM_{10} Network

The minimum number of required PM_{10} monitoring stations for the MSA is dependent upon population and concentration measurements. High concentration areas are those for which the ambient PM_{10} data show concentrations exceeding the PM_{10} NAAQS by 20 percent or more. Medium concentration areas are those for which ambient PM_{10} data show concentrations exceeding 80 percent of the NAAQS. Low concentration areas are those for which ambient PM_{10} data show concentrations less than 80 percent of the NAAQS.

PM_{10} data for 2017 showed the Honolulu MSA to be a low concentration area (Table 2-1) and, therefore, is required to have one to two PM_{10} monitors (Table 2-2). In the absence of a PM_{10} design value for the newly designated Maui MSA and with a population <250,000, no PM_{10} monitoring is required in that MSA. The state meets the minimum PM_{10} monitoring requirements with three PM_{10} stations in the Honolulu MSA.

Table 2-1. PM_{10} Network and Concentrations for the Honolulu MSA[1]

Site Name	AQS No.	2017 Maximum 24-Hr Value (µg/m³)	Percent of 24-Hr NAAQS	Sampling Frequency
Honolulu	150031001	31	21	Continuous
Kapolei	150030010	**39**	26	Continuous
Pearl City	150032004	**39**	26	Continuous

[1] There is currently no PM_{10} monitor operating in the Maui MSA

Table 2-2. PM_{10} Minimum Monitoring Requirements for Each MSA

MSA Population Category (2010 Census) (40 CFR 58 Appendix D Table D-4)	High Concentration ≥120% of NAAQS (≥180 µg/m³)	Medium Concentration >80% of NAAQS (>120 µg/m³)	Low Concentration <80% of NAAQS (<120 µg/m³)[1]
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	**1-2**
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

MSA	2010 Census Population	Highest 24-hr Value (2017)	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Honolulu	953,207	39 µg/m³	1-2	3	0
Maui	154,834	No data available	0[1]	0	0

[1] 40 CFR Part 58 Appendix D Section 4.6 Table D-4 states that in the absence of a design value, these minimum monitoring requirements apply.

Figure 2-1 is a map of the current PM_{10} sites in the state. All of the PM_{10} stations are in the Honolulu MSA.

Figure 2-1. PM_{10} Network

2.2 $PM_{2.5}$ Network

The state must operate a minimum number of required $PM_{2.5}$ monitors based on population and the most recent 3-year design value in each MSA. There are four $PM_{2.5}$ SLAMS in the Honolulu MSA and one SLAMS in the Maui MSA with complete design values. The design value for the annual $PM_{2.5}$ standard is the most current 3-year average annual mean for each site. The design value for the 24-hour $PM_{2.5}$ standard is the most current 3-year average of annual 98th percentile 24-hour values recorded at each monitoring site. Table 2-3 shows the annual and daily design values for complete data years 2015 to 2017.

The most recent 3-year design values in the Honolulu and Maui MSAs were less than 85% of any $PM_{2.5}$ NAAQS. Table 2-4 shows that the state operates more than the minimum monitoring requirements for $PM_{2.5}$ in each MSA. Additionally, in 2017, the state operated one SPMS in the Maui MSA and five SPMS on the island of Hawaii for volcanic emissions, and one SPMS on the island of Kauai to monitor cruise ship emissions.

The IMPROVE monitoring station (HACR1) at Haleakala National Park on Maui, operated by the National Park Service, serves as the background/transport $PM_{2.5}$ site for the state's network. All primary $PM_{2.5}$ monitors operated by the state are continuous FEM. Figure 2-2 shows the map locations of all the $PM_{2.5}$ stations in the state, including SPMS and the IMPROVE monitor.

Table 2-3. $PM_{2.5}$ Network and Concentrations for Each MSA

Site	AQS No.	Sampling Frequency	Annual Design Value (µg/m^3) 2015 – 2017	Percent of Annual NAAQS (12µg/m^3)	Daily Design Value (µg/m^3) 2015-2017	Percent of 24-Hour NAAQS (35 µg/m^3)
Honolulu MSA						
Honolulu	150031001	Continuous	3.0	25	10	29
Kapolei	150030010	Continuous	**4.2**	35	**12**	34
Pearl City	150032004	Continuous	4.1	34	**12**	34
Sand Island	150031004	Continuous	4.1	34	11	31
Maui MSA						
Kihei	150090006	Continuous	**4.2**	35	**12**	34

NOTE: Haleakala IMPROVE (150099001) is the $PM_{2.5}$ background/transport site for Hawaii and is operated and maintained by the NPS

Table 2-4. $PM_{2.5}$ Minimum Monitoring Requirements for Each MSA

MSA Population Category (2010 Census) (40 CFR 58 Appendix D Table D-5)	Most recent 3-year Design Value ≥85% of any $PM_{2.5}$ NAAQS (≥29.75 µg/m³ for 24-hr standard; ≥10.2 µg/m³ for annual standard)	Most recent 3-year Design Value <85% of any $PM_{2.5}$ NAAQS (<29.75 µg/m³ for 24-hour standard; <10.2 µg/m³ for annual standard)
>1,000,000	3	2
500,000-1,000,000	2	**1**
50,000-<500,000	1	0

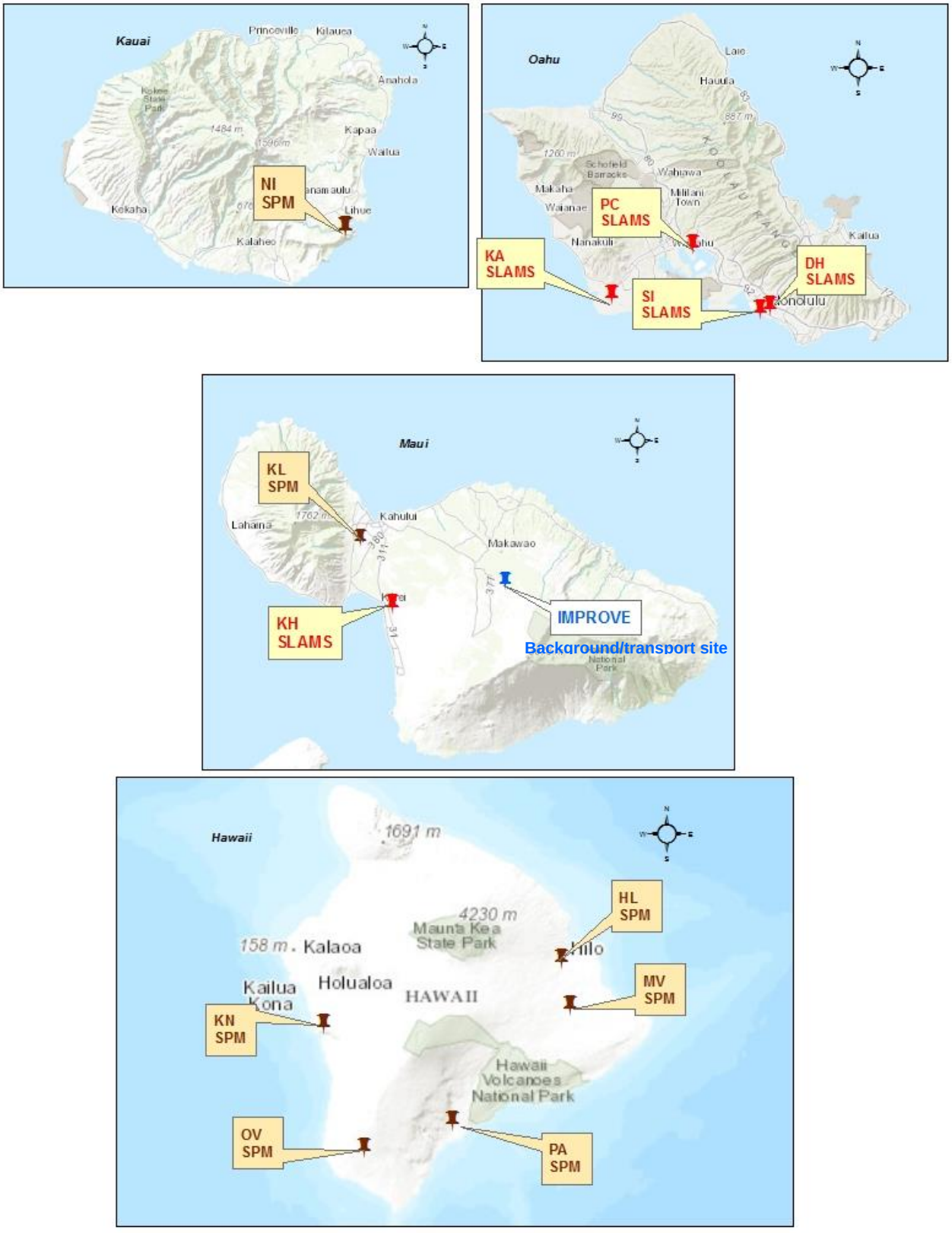
MSA	2010 Census Population	Highest Annual Design Value 2015 – 2017	Highest Daily Design Value 2015-2017	Required No. of Monitors	Number of Active Monitors in the MSA	Number of Monitors Needed
Honolulu	953,207	4.2	12	1	4	0
Maui	154,834	4.2	12	0	1 SLAMS/ 1 SPMS	0

Appendix A to 40 CFR 58 requires that 15 percent of each $PM_{2.5}$ monitoring method be co-located. The state currently operates four SLAMS, one NCore and seven SPMS FEM monitors. With a total of 12 stations, two co-located monitors are required. One FRM co-located monitor is operating at the Kapolei NCore station. A $PM_{2.5}$ FEM was co-located at the Kona station with EPA Region 9 approval, and began operating January 1, 2014. Table 2-5 summarizes the $PM_{2.5}$ co-located network.

Table 2-5. $PM_{2.5}$ Co-located Network

Method Code	# Primary Monitors	# Required Co-located	# Active Co-located FRM	# Active Co-located FEM (same method designation as primary)
170	12	2	1	1

Figure 2-2. $PM_{2.5}$ Network



2.3 O_3 Network

The state must operate a minimum number of O_3 monitors depending upon MSA population and typical peak concentrations. NCore sites are intended to complement O_3 data collection but can be used to meet the minimum monitoring requirements.

The O_3 monitoring season for the state of Hawaii is 12-months from January to December. The O_3 design value is the 3-year average of the fourth-highest daily maximum 8-hour concentrations measured at each monitor.

The most recent O_3 design value concentrations at the Sand Island and Kapolei NCore stations in the Honolulu MSA showed less than 85% of the O_3 NAAQS (Table 2-6). The Maui MSA does not have any O_3 monitoring. However, with a 2010 census population of 154,834, according to 40 CFR Part 58 Appendix D Table D-2 and, as shown in Table 2-7 below, in the absence of a design value, no O_3 monitor is required in that MSA. The state meets the minimum O_3 network monitoring requirements.

Table 2-6. O_3 Design Values for the Honolulu MSA

Stations in the MSA	8-Hour Design Value 2015 – 2017	2010 MSA Census Population	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Sand Island (150031004)	0.047	953,207	1	2	0
Kapolei (150030010)	0.048				
There is no O_3 monitor in the Maui MSA		154,834	0	0	0

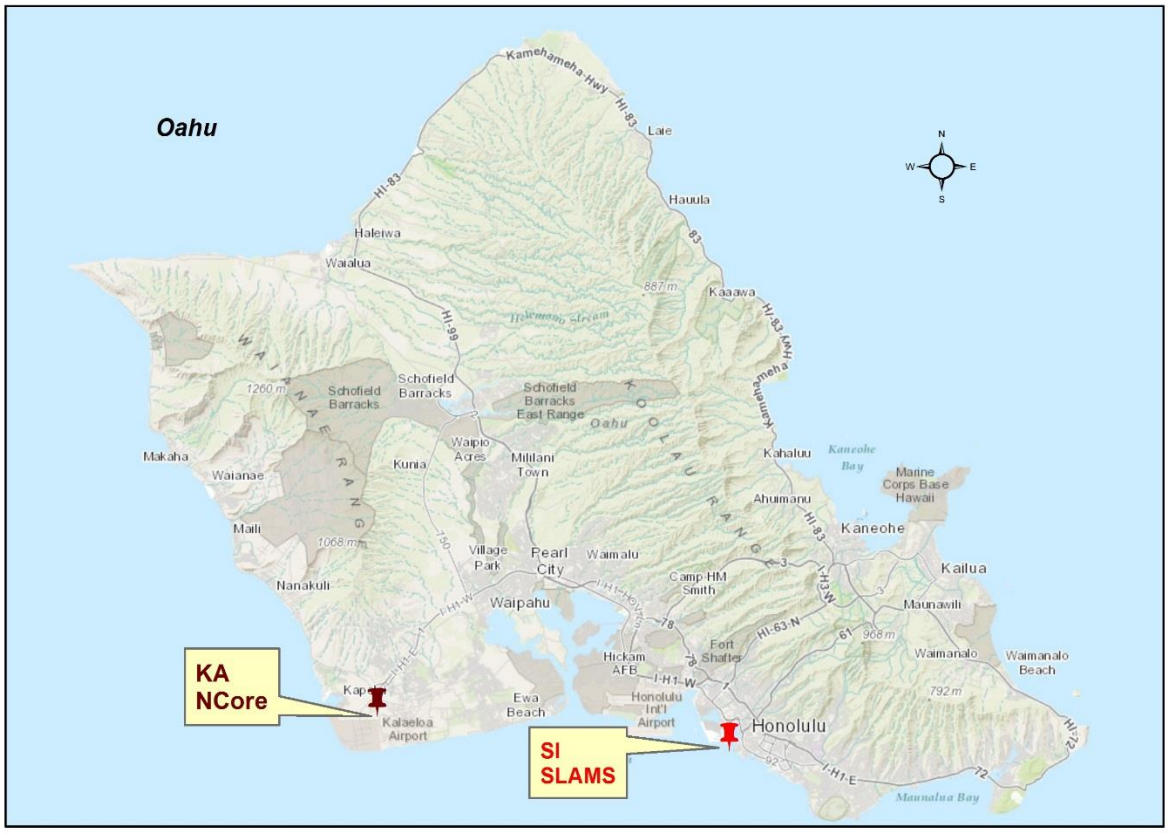
Table 2-7. O_3 Minimum Monitoring Requirements for Each MSA

MSA Population Category (40 CFR 58 Appendix D Table D-2)	Most recent 3-year design value ≥85% of any O_3 NAAQS (≥.064 ppm, 8-hr standard)	Most recent 3-year design value <85% of any O_3 NAAQS (<.064 ppm, 8-hr standard)[1]
>10 million	4	2
4-10 million	3	1
350,000-<4 million	2	**1**
50,000-<350,000	1	0

[1] According to 40 CFR part 58 Appendix D, Table D-2, these minimum monitoring requirements apply in the absence of a design value.

Figure 2-3 shows the map locations of the SLAM and NCore O_3 stations. Both stations are located in the Honolulu MSA.

Figure 2-3. O_3 Network



2.4 Pb Network

With a 2010 census population of 953,207 in the Honolulu MSA, the state is required to conduct non-source-oriented Pb monitoring at the Kapolei NCore site (Table 2-8). This NCore site began collecting Pb data on January 1, 2012. Figure 2-4 shows the location of the Pb monitoring site at the Kapolei NCore station. Appendix D to 40 CFR Part 58 also requires source-oriented Pb monitoring for sources emitting 0.50 or more tons per year (TPY) according to the most recent emissions inventory. There are no sources in the state emitting 0.5 or more TPY of Pb. No Pb monitoring is required in the Maui MSA.

Since the beginning, the station has recorded concentrations of Pb well below the standard, at approximately one to two percent of the standard. Therefore, pending EPA approval, the Pb monitoring at NCore will be discontinued on December 31, 2018.

Table 2-8. Minimum Pb Monitoring Requirement at NCore

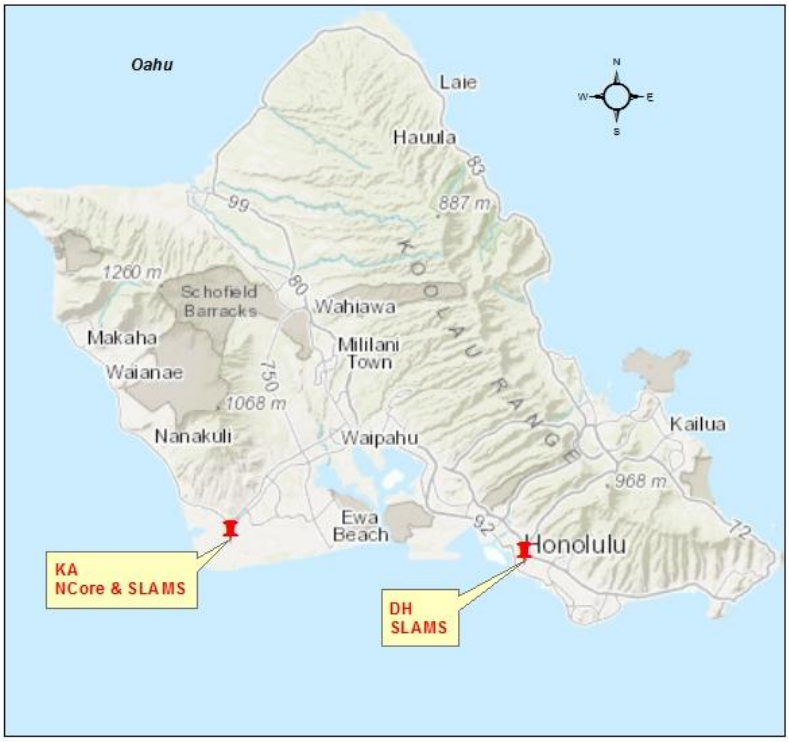
NCore	AQS ID	CBSA	2010 Census Population	# Required Monitors	# Active Monitors	# Monitors Needed
KA	150030010	Honolulu	953,207	1	1	0

Figure 2-4. Pb Monitoring Station

2.5 CO Network

The state operates two SLAMS and one SLAMS/NCore CO monitors in the Honolulu MSA. Figure 2-5 shows the locations of the CO sites in the state. 40 CFR Part 58, Appendix D Section 4.2.2 requires one co-located CO monitor at near-road NO_2 sites in Core-based Statistical Areas (CBSA) with populations ≥1,000,000. The Honolulu MSA had a 2010 census population estimated at 953,207 and therefore is not currently required to co-locate a CO monitor. No CO monitoring is required in the Maui MSA.

Figure 2-5. CO Network



2.6 NO_2 Network

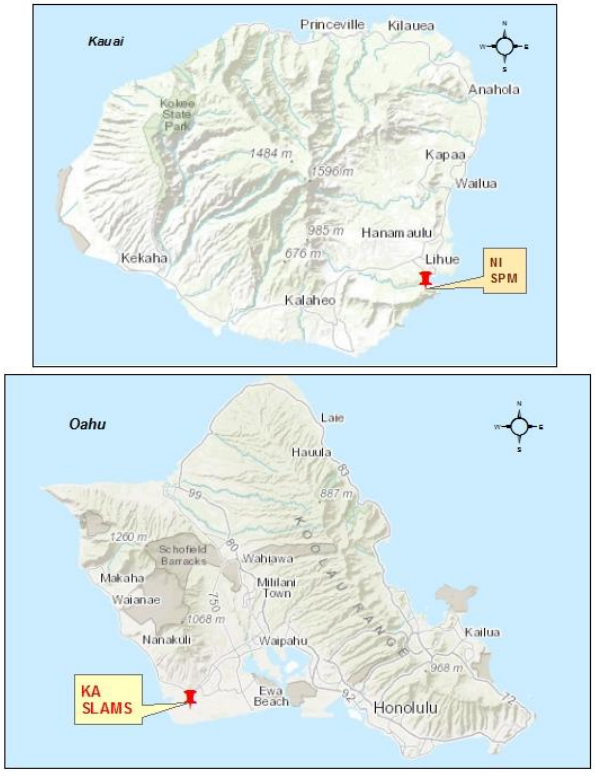
Near-road NO_2 monitoring requirement for CBSAs with a population of greater than 500,000 but less than one million, which includes the Honolulu MSA, has been removed by EPA as of December 22, 2016. The population and Annual Average Daily Traffic (AADT) for the Honolulu CBSA will be monitored, and in the event they hit the minimum threshold in the future, the near-road monitoring will be implemented. There are no other minimum NO_2 monitoring requirements. The state currently has one SLAMS NO_2 station in the MSA and one SPMS on the island of Kauai. No NO_2 monitoring is required in the Maui MSA.

Table 2-9. Minimum Near-Road NO_2 Monitoring Requirements for the MSA

CBSA	2010 Census Population	Max AADT Counts (2010)[1]	# Required Monitors	# Monitors to be operational by 1/1/2017
Honolulu	953,207	236,000	0	0

[1] 2010 estimated average AADT provided by the State of Hawaii Department of Transportation

Figure 2-6. NO_2 Network



2.7 SO_2 Network

EPA has established the Population Weighted Emissions Index (PWEI) to determine required SO_2 monitoring. The PWEI is calculated by multiplying the population of each CBSA with the total amount of SO_2 in TPY emitted within the CBSA area and dividing the result by one million. According to this calculation, Hawaii is required to operate one SO_2 monitor in the Honolulu MSA and none in the Maui MSA (Table 2-10). The state currently operates two SLAMS SO_2 monitors in the Honolulu MSA, and one at the NCore station in Kapolei; it therefore meets the minimum number of required SO_2 stations. There are no requirements for a SO_2 monitor in the Maui MSA. Figure 2-7 shows the locations of the SLAMS and SPMS SO_2 sites.

SO_2 continues to be one of the pollutants of concern in communities on the island of Hawaii with the ongoing eruption of the Kilauea volcano. There are currently five stations monitoring for volcanic emissions, two of which are SLAM stations (Hilo and Kona). Three of the five SO_2 monitoring stations (Mountain View, Pahala and Ocean View) are SPMS that use FEM monitors and follow all of the requirements of 40 CFR 58 Appendices A, D, and E. The three stations have been operating for more than 24 months and therefore are subject to NAAQS comparison.

The state also established a station to monitor for cruise ship emissions on the island of Kauai. This is a SPM station which includes FEM monitoring for SO_2, follows all requirements of 40 CFR 58 Appendices A, D, and E, and as of April 2, 2013, has been operating for more than 24 months and is eligible for comparison with the NAAQS.

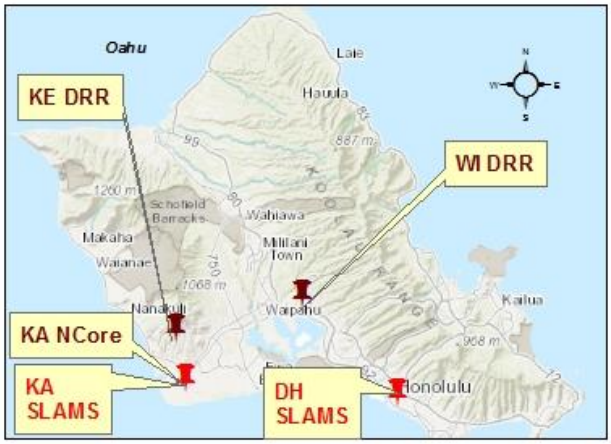
The state is also required by 40 CFR Part 51, Subpart BB, Data Requirements Rule, to characterize maximum 1-hour ambient concentrations of SO_2 through either ambient air quality monitoring or air quality modeling analysis. The state has established two new air stations, Kahe and Waiau, to monitor four sources that has been identified as having SO_2 emissions data of 2,000 tons or more (see detailed site description for more information).

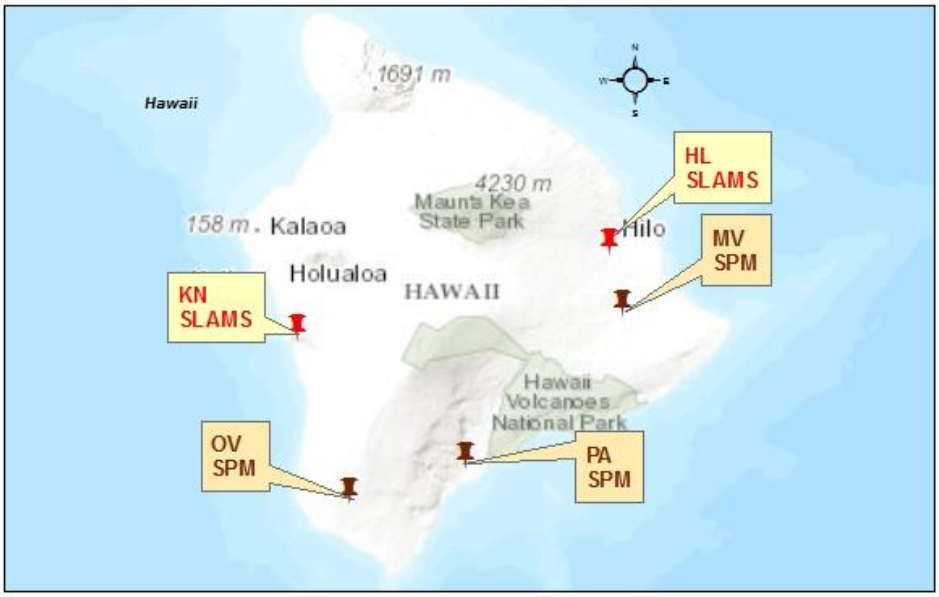
Table 2-10. Minimum SO_2 Monitoring Requirements

CBSA	County	2010 Census Population	Total SO_2 (tons/year) 2011 NEI	PWEI[1]	DRR[2] Sources Using Monitoring	# Required Monitors	# Active Monitors	# Monitors Needed
Honolulu	City & County of Honolulu	953,207	18,600	17,730	4	1	2 SLAMS 1 SLAMS/ NCore	0
Maui	Maui	154,834	4,097	634	0	0	0	0

[1] According to 40 CFR 58 Appendix D, if the PWEI for a CBSA is ≥ 5,000 but < 100,000, a minimum of one SO_2 monitor is required.
[2] Data Requirements Rule for the 2010 1-Hour SO_2 Primary NAAQS.

Figure 2-7. SO_2 Network





2.8 NCore

The Kapolei NCore station is located in the rapidly-growing residential, commercial, and industrial community on the southwest side of Oahu. Kapolei is considered to be the "second city" next to Honolulu with county, state and federal agencies also establishing offices in the area. The NCore parameters are: NO/NO_y, trace-level SO_2, trace-level CO, O_3, $PM_{10-2.5}$, $PM_{2.5}$ speciation, Pb and the meteorological parameters wind speed, wind direction, temperature and relative humidity.

By correspondence dated October 30, 2009, EPA approved Kapolei as the NCore station and it became fully operational on January 1, 2011 with Pb-TSP collection beginning January 1, 2012 as required in 40 CFR 58 Appendix D, paragraph 3(b).

2.9 H_2S Network

The state has a one-hour H_2S standard of 25 parts per billion (ppb) established primarily to determine the effects of geothermal energy exploration and production on the island of Hawaii. Puna Geothermal Ventures (PGV) is a 41 megawatt geothermal power plant located in the lower east rift zone of the Kilauea volcano.

Although PGV is required by their non-covered source permit to maintain three air stations to monitor for H_2S, the DOH also established a air station in the community of Leilani Estates, downwind of the plant, to monitor ambient levels of H_2S due to geothermal exploration and operations.

The new eruptions at the Lower East Rift Zone (LERZ) of the Kilauea volcano that began on May 3, 2018, have cut off access to our station in Leilani Estates, and power to the station. The future of this station remains uncertain.

2.10 Site Closure

There has been no site closures since the last annual network plan was submitted. There are no plans to close any of the current sites in the next eighteen (18) months.

2.11 Site Additions

There has been no site additions since the last annual network plan was submitted. Due to the new eruptions at the LERZ of the Kilauea volcano that began on May 3, 2018, the state is considering adding additional sites to monitor for SO_2 and $PM_{2.5}$ in communities which currently do not have monitoring in place. The number of these SPM stations have not been determined at this time.

2.12 Site Modifications

There has been no site modifications since the last annual network plan was submitted. As stated previously in Section 2.4, the Pb monitoring at NCore will be discontinued on December 31, 2018, pending EPA approval. The state is also planning on adding SO_2 monitoring at the existing Kihei station.

In addition, there are plans to replace some of the existing BAM 1020 instruments within the $PM_{2.5}$ network to BAM 1022 instruments. There are no plans to modify any of the other current sites in the next 18 months.

2.13 Summary of Network and Changes

Table 2-11 summarizes the state's 2018 network monitors and planned changes. Since it has been determined that no criteria monitors are currently required in the Maui MSA, only monitors required for the Honolulu MSA are addressed in the table. Sections 2.10 to 2.12 detail station closures, additions and equipment or network modifications, and is summarized in Table 2-12.

As indicated in table 2-11, the monitors used for all criteria pollutants are FRM or FEM and follow the requirements of 40 CFR 58 and Appendices A, C, D, E and G. Hawaii's air monitoring network meets or exceeds the minimum required monitoring for each parameter.

Table 2-11. Number of Monitors by Pollutant or Program

N/A = Not applicable

Pollutant/ Program	SLAMS Only	SPMS	SLAMS/NCore	No. of Co-located	Total in MSA[1,2]	Total in State[2]	Total Required in MSA[1]	Meets EPA Required Minimum?	Planned Additions	Planned Closures
CO (FRM)	2	0	1	N/A	3	3	N/A	N/A	0	0
NO_2 (FRM)	1	1	---	N/A	1	2	N/A	N/A	0	0
SO_2 (FEM)	6	4	1	N/A	3	11	1	YES	0	0
O_3 (FEM)	1	0	1	N/A	2	2	1	YES	0	0
NO/NO_y	N/A	N/A	1 (NCore)	N/A	1	1	1	YES	0	0
PM_{10} (FEM)	2	0	1	N/A	3	3	1-2	YES	0	0
$PM_{2.5}$ (all are FEM)	4	7	1	1 FRM 1 FEM	4	12	1	YES	0	0
Pb (FRM)	0	0	1 (NCore)	1	1	1	1 (NCore)	YES	0	1
$PM_{2.5}$ Speciation	0	0	1 (NCore/ Supplemental Speciation)	N/A	1	1	1 (NCore)	YES	0	0
$PM_{10-2.5}$	N/A	N/A	1 (NCore)	N/A	1	1	1 (NCore)	YES	0	0
H_2S	N/A	1	N/A	N/A	0	1	N/A	N/A	0	0

[1] As promulgated in 40 CFR 58 Appendix D, the minimum monitoring requirements apply to Metropolitan Statistical Areas (MSA). Currently, only the Honolulu MSA has requirements for minimum criteria pollutant monitoring.

[2] Total refers to the number of primary monitors only and does not count co-located monitors.

Table 2-12. Summary of Network Changes

Site	AQS ID	Site Type	Affected Parameters	Reason for Closure/Addition/Modification
All Counties				
				No changes since the last annual network plan was submitted.

3.0 Detailed Site Descriptions

Following are descriptions and photos of each station in the state's current ambient air monitoring network. The descriptions include area location, traffic, probe siting, monitor information and adherence to quality assurance.

DOH Air Quality Monitoring Section of the State Laboratories Division (AQMS) is the collecting and reporting agency for all stations and monitors operating in the state.

Table 3-1. State of Hawaii Ambient Air Monitoring Network

ID	AQS No.	Site Name	Basic Monitoring Objective(s)[1]	Parameters
DH	150031001	Honolulu	1,2	$PM_{2.5}$, PM_{10}, SO_2
KA SLAMS/NCore	150030010	Kapolei	1,2,3	$PM_{2.5}$, $PM_{2.5}$ co-located, ($PM_{10-2.5}$), PM_{10}, trace SO_2, SO_2, NO_2, NO/NO_y, trace CO, CO, O_3, Pb, Pb co-located, $PM_{2.5}$ speciation, WS, WD, RH, Ambient Temperature
PC	150032004	Pearl City	1,2	$PM_{2.5}$, PM_{10}
SI	150031004	Sand Island	1,2	$PM_{2.5}$, O_3
KH	150090006	Kihei	1,2,3	$PM_{2.5}$
KL	150090025	Kahului	1, 2	$PM_{2.5}$
NI	150070007	Niumalu	1,2,3	$PM_{2.5}$, SO_2, NO_2
HL SLAMS	150011006	Hilo	1,2,3	SO_2
HL SPMS	150011006	Hilo	1,2,3	$PM_{2.5}$
KN SLAMS	150011012	Kona	1,2,3	SO_2
KN SPMS	150011012	Kona	1,2,3	$PM_{2.5}$, $PM_{2.5}$ co-located FEM
MV	150012023	Mt. View	1,2,3	$PM_{2.5}$, SO_2
OV	150012020	Ocean View	1,2,3	$PM_{2.5}$, SO_2
PA	150012016	Pahala	1,2,3	$PM_{2.5}$, SO_2
PE	150012010	Puna E	1,3	H_2S
KE	150034001	Kahe	1,2,3	SO_2
WI	150034100	Waiau	1,2,3	SO_2

[1] Basic Monitoring Objectives:

1) Public information
2) NAAQS compliance
3) Support research

(DH) HONOLULU			
AQS: 150031001	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 1250 Punchbowl St., Honolulu, HI 96813			
Latitude: 21.30758 Longitude: -157.85542			Elevation: 20 m MSL
Location Description: This station is located on the roof of the state Department of Health building in downtown Honolulu. The surrounding streets are busy thoroughfares serving the downtown area. The area includes a major hospital (Queen's Medical Center), the state capitol, other state, county, commercial and business buildings as well as residential condominiums. This station has been operating since 1972.			

DH TRAFFIC DESCRIPTION			
Type of Roadway	Punchbowl	S. Beretania	Vineyard
Freeway			
Major Street or Highway	X	X	X
Distance from air intake (m)	30	122	610
Direction from air inlet	E	S	N
Composition of roadway	asphalt	asphalt	asphalt
Number of traffic lanes	5	6	6
Average daily traffic	35,844[1]	53,046[1]	48,445[1]
Average vehicle speed (est. mph)	20	25	25
Traffic one way or two	2	1	2
Street parking?	No	No	No
[1] Source: State of Hawaii Department of Transportation 2006 count			

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

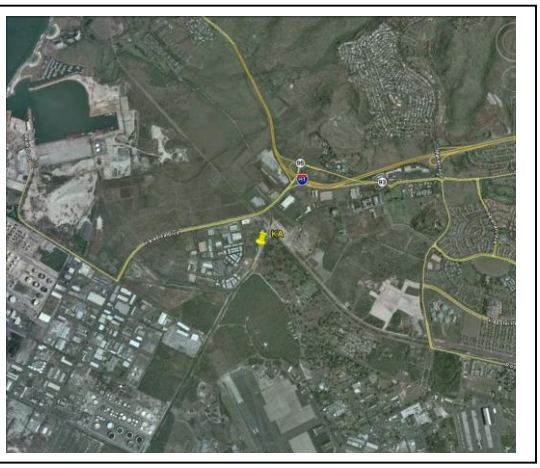
[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(DH) Honolulu continued

DH MONITOR INFORMATION (N/A = Not Applicable)				
	PM_{10}	**$PM_{2.5}$**	**SO_2**	**CO**
POC/FRM or FEM	1/FEM	3/FEM	6/FEM	1/FRM
Type of Monitor	SLAMS	SLAMS	SLAMS	SLAMS
AQS parameter code	81102	88101	42401	42101
Manufacturer	Met One	Met One	TECO	TECO
Model No.	BAM1020	BAM 1020	43i	48i
AQS method code	122	170	060	054
Monitoring start date	7/1/2009	4/1/2009	10/16/1992	1/1/1972
Monitoring frequency	Continuous	Continuous	Continuous	Continuous
Probe material	N/A	N/A	Glass	Glass
Residence time (sec)	N/A	N/A	17.0	17.0
Distance between co-located monitors	N/A	N/A	N/A	N/A
Analytical laboratory	N/A	N/A	N/A	N/A
Location of probe	building roof	building roof	building roof	building roof
Building dimensions (H) (m)	12	12	12	12
Horizontal distance from supporting structure (m)	9	11	9	9
Vertical distance above supporting structure (m)	1.8	1.8	1.2	1.2
Height of probe above ground (m)	13.8	13.8	13.2	13.2
Distance (m) & direction from drip line of tree(s)	24 E	24 E	27 E	27 E
Horizontal distance from edge of nearest traffic lane (m)	27	27	30	30
Horizontal distance from nearest parking lot (m)	24	24	24	24
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	9 ESE, 2.7	11 ESE, 2.7	9 ESE, 2.7	9 ESE 2.7
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from furnace or incineration flues	234 S/SW	234 S/SW	238 S/SW	238 S/SW
Unrestricted airflow	360°	360°	360°	360°
Located in paved (P) or vegetative (V) ground?	P	P	P	P
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Middle
Applicable NAAQS averaging time(s)	24-hr	24-hr, annual	1-hr, 3-hr, annual	1-hr, 8-hr
Sampling season	12 months	12 months	12 months	12 months
Site type[1]	2	2	2	1
Purpose of Monitor[2]	1, 2	1, 2	1, 2	1, 2
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	Yes	N/A	N/A
DATA QUALITY				
Last PEP	N/A	10/15/17	N/A	N/A
Last NPAP (2017 NPAP done for O_3 only in SI site)	N/A	N/A	12/11/13	12/11/13
Date of last annual independent performance audit (AQMS)	N/A	N/A	6/20/17	6/20/17
Frequency of flow rate verification (automated PM)	Monthly	Monthly	N/A	N/A
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (PM)	4/12/17; 11/7/17	4/12/17; 11/7/17	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	N/A
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	Quarterly
Frequency of 1-pt. QC check (gases)	N/A	N/A	Weekly	Weekly
Frequency of multi-point gas calibration	N/A	N/A	60 days	60 days
Annual data certification submitted	5/1/18	5/1/18	5/1/18	5/1/18
Changes in the next 18 months?	None	Yes (upgrade to BAM 1022)	None	None

(KA) KAPOLEI SLAMS and NCORE			
AQS: 150030010	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 2052 Lauwiliwili St., Kapolei, HI 96707			
Latitude: 21.32374 Longitude: -158.08861			Elevation: 17.9 m MSL

Location Description:
Located in the Kapolei Business Park, in the rapidly growing "second city" of Kapolei, the area is a mix of business, commercial, and government activities surrounded by an ever expanding residential community. The site is also approximately 1.25 km northeast (upwind) of the state's largest industrial park on the southwest coast of the island of Oahu. The station has been operating as a SLAMS station since 2002.
On October 30, 2009, EPA approved the Kapolei station as the state's NCore site and in addition to the SLAMS parameters, the station began collecting the required NCore parameters on January 1, 2011 and Pb on January 1, 2012.



KA TRAFFIC DESCRIPTION		
Type of Roadway	Kalaeloa Blvd.	Lauwiliwili St.
Freeway		
Major Street or Highway	X	
Local Street or Road		X
Distance from air intake (m)	379	167
Direction from air inlet	NW	W
Composition of roadway	asphalt	asphalt
Number of traffic lanes	4	2
Average daily traffic	18,255[1]	[2] Estimated: <5,000
Average vehicle speed (est. mph)	35	30
Traffic one way or two	2	2
Street parking?	No	Yes
[1] Source: State of Hawaii Department of Transportation	[2] Estimate only, no data available, local road	

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(KA) Kapolei SLAMS and NCore continued

KA MONITOR INFORMATION (N/A = Not Applicable)				
	PM_{10}	**$PM_{2.5}$ Primary**	**$PM_{2.5}$ Co-loc**	**$PM_{10-2.5}$**
POC/FRM or FEM	3/FEM	1/FEM	2/FRM	uses $PM_{2.5}/PM_{10}$
Type of Monitor	SLAMS/NCore	SLAMS/NCore	SLAMS/NCore	NCore
AQS parameter code	81102	88101	88101	86101
Manufacturer	Met One	Met One	Andersen	
Model No.	BAM1020	BAM 1020	RAAS2.5	
AQS method code	122	170	120	
Monitoring start date	12/18/2008	1/1/2009	1/1/2011	
Monitoring frequency	Continuous	Continuous	1/3 days	
Probe material	N/A	N/A	N/A	
Residence time (sec)	N/A	N/A	N/A	
Manual PM instrument flow rate (liters per minute)	N/A	N/A	16.7	
Distance between co-located monitors	N/A	4 m	4 m	
Analytical laboratory	N/A	N/A	ASAS	
Location of probe	shelter roof	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5	
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	
Vertical distance above supporting structure (m)	1	1.7	1.7	
Height of probe above ground (m)	5	5.7	5.7	
Distance (m) & direction from drip line of tree(s)	17 N	17 N	13 N	
Horizontal distance from edge of nearest traffic lane (m)	167	165	169	
Horizontal distance from nearest parking lot (m)	87	83	87	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	170 E, 9	170 E, 9	170 E, 9	
Distance (m) & direction from furnace or incineration flues	None	N/A	None	
Unrestricted airflow	360°	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	V	
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging time(s)	24-hr	24-hr, annual	24-hr, annual	N/A
Sampling season	12 months	12 months	12 months	12 months
Site type[1]	2	2	QC	2
Purpose of Monitor[2]	1, 2	1, 2	QC	4
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	Yes	Yes	N/A
DATA QUALITY				
Last PEP	N/A	10/15/17	N/A	
Last NPAP	N/A	N/A	N/A	
Date of last annual independent performance audit (AQMS)	N/A	N/A	N/A	
Frequency of flow rate verification (automated PM)	Monthly	Monthly	N/A	
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A	Monthly	
Dates of last 2 semi-annual flow rate audits (PM)	12/1/17, 6/20/17	6/20/17	12/1/17, 6/20/17	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	N/A	N/A	
Frequency of multi-point gas calibration	N/A	N/A	N/A	
Annual data certification submitted	5/1/18	5/1/18	5/1/18	
Changes in the next 18 months?	None	None	None	None

(KA) Kapolei SLAMS and NCore continued

KA MONITOR INFORMATION (N/A = Not Applicable)				
	CO	**SO_2**	**NO_2**	**O_3**
POC/FRM or FEM	1/FRM	1/FEM	1/FRM	1/FRM
Type of Monitor	SLAMS	SLAMS	SLAMS	SLAMS/NCore
AQS parameter code	42101	42401	42602	44201
Manufacturer	TAPI	TECO	TAPI	TECO
Model No.	T300	43i	T500U	49i
AQS method code	093	060	212	047
Monitoring start date	7/29/2002	7/29/2002	7/29/2002	1/1/2011
Monitoring frequency	Continuous	Continuous	Continuous	Continuous
Probe material	Glass	Glass	Glass	Glass
Residence time (sec)	16.2	16.2	16.2	12.8
Distance between co-located monitors	N/A	N/A	N/A	N/A
Analytical laboratory	N/A	N/A	N/A	N/A
Location of probe	shelter roof	shelter roof	shelter roof	shelter roof
Shelter dimensions (H x W x D) (m)	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1.1	1.1	1.1	1
Height of probe above ground (m)	5.1	5.1	5.1	5
Distance (m) & direction from drip line of tree(s)	19 N	19 N	19 N	12 N
Horizontal distance from edge of nearest traffic lane (m)	167	167	167	162
Horizontal distance from nearest parking lot (m)	87	87	87	82
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	170 E, 9	170 E, 9	170 E, 9	165 E, 9
Distance (m) & direction from furnace or incineration flues	None	None	None	None
Unrestricted airflow	360°	360°	360°	360°
Located in paved (P) or vegetative (V) ground?	V	V	V	V
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging time(s)	1-hr; 8-hr	1-hr; 3-hr; annual	1-hr, annual	8-hr
Sampling season	12 months	12 months	12 months	12 months
Site type[1]	2	2	2	2
Purpose of Monitor[2]	1, 2	1, 2	1, 2	1,2
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A
DATA QUALITY				
Last PEP	N/A	N/A	N/A	N/A
Last NPAP	6/24/15	6/24/15	6/24/15	6/24/15
Date of last annual independent performance audit (AQMS)	5/8/17	3/20/17	2/22/18	9/25/17
Frequency of flow rate verification (automated PM)	N/A	N/A	N/A	N/A
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (PM)	N/A	N/A	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	N/A
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	Quarterly
Frequency of 1-pt. QC check (gases)	Weekly	Weekly	Weekly	Weekly
Frequency of multi-point gas calibration	60 days	60 days	60 days	60 days
Annual data certification submitted	5/1/18	5/1/18	5/1/18	5/1/18
Changes in the next 18 months?	None	None	None	None

(KA) Kapolei SLAMS and NCore continued

KA MONITOR INFORMATION (N/A = Not Applicable)				
	Trace CO	**Trace SO_2**	**NO/NOy**	**Pb-TSP**
POC/FRM or FEM	2/FRM	2/FEM	1/FRM	1FRM
Type of Monitor	SLAMS/NCore	SLAMS/NCore	NCore	NCore
AQS parameter code	42101	42401	42601/42600	14129
Manufacturer	API	API	API	Graseby
Model No.	M300EU	M100EU	T200U	2376105
AQS method code	093	600	099	191
Monitoring start date	1/1/2011	1/1/2011	1/1/2011	1/1/2012
Monitoring frequency	Continuous	Continuous	Continuous	1/6 days
Probe material	Glass	Glass	Glass	N/A
Residence time (sec)	12.8	12.8	12.8	N/A
Distance between co-located monitors	N/A	N/A	N/A	4 m
Analytical laboratory	N/A	N/A	N/A	ASAS
Location of probe	shelter roof	shelter roof	shelter roof	shelter roof
Shelter dimensions (H x W x D) (m)	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1	1	1	1.7
Height of probe above ground (m)	5	5	5	5.7
Distance (m) & direction from drip line of tree(s)	12 N	12 N	12 N	15 N
Horizontal distance from edge of nearest traffic lane (m)	162	162	162	160
Horizontal distance from nearest parking lot (m)	82	82	82	80
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	165 E, 9	165 E, 9	165 E, 9	165 E, 9
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Located in paved (P) or vegetative (V) ground?	V	V	V	V
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging time(s)	1-hr; 8-hr	1-hr; 3-hr; annual	N/A	3-month
Sampling season	12 months	12 months	12 months	12 months
Site type[1]	2	2	2	2
Purpose of Monitor[2]	1,2,4	1,2,4	4	2,4
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A
DATA QUALITY				
Last PEP	N/A	N/A	N/A	N/A
Last NPAP	12/5/12	12/5/12	12/5/12	N/A
Date of last annual independent performance audit (AQMS)	5/8/17	5/8/17	9/25/17	N/A
Frequency of flow rate verification (automated PM)	N/A	N/A	N/A	N/A
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (manual $PM_{2.5}$)	N/A	N/A	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	1/3 months
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	6/20/17; 12/13/17
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	Quarterly
Frequency of 1-pt. QC check (gases)	Weekly	Weekly	Weekly	N/A
Frequency of multi-point gas calibration	60 days	60 days	60 days	N/A
Annual data certification submitted	5/1/18	5/1/18	5/1/18	5/4/16
Changes in the next 18 months?	None	None	None	Yes (Pb project ends 2018_Q4)

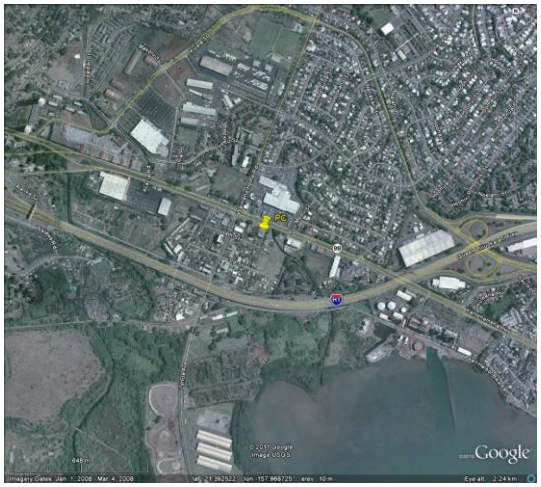
(KA) Kapolei SLAMS and NCore continued

KA MONITOR INFORMATION (N/A = Not Applicable)				
	Pb-TSP Co-loc	**$PM_{2.5}$ Spec.**	**RH**	**WS**
POC/FRM or FEM	2/FRM	N/A	POC 1	POC 1
Type of Monitor	NCore	NCore/Supp. Speciation	NCore	NCore
AQS parameter code	14129	Various	62201	61103
Manufacturer	Graseby	Met-One/URG	RM Young	RM Young
Model No.	2376105	SASS/300N	05103VP	05103VP
AQS method code	191	810/136	014	020
Monitoring start date	1/1/2012	10/1/2009	1/1/2011	1/1/2011
Monitoring frequency	1/6 days	1/3 days	Continuous	Continuous
Probe material	N/A	N/A	N/A	N/A
Residence time (sec)	N/A	N/A	N/A	N/A
Distance between co-located monitors	4 m	N/A	N/A	N/A
Analytical laboratory	ASAS	EPA contract	N/A	N/A
Location of probe	shelter roof	shelter roof	10m tower	10m tower
Shelter dimensions (H x W x D) (m)	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1.7	1.7/1.6	N/A	N/A
Height of probe above ground (m)	5.7	5.7/5.6	N/A	N/A
Distance (m) & direction from drip line of tree(s)	17 N	13N/11N	N/A	N/A
Horizontal distance from edge of nearest traffic lane (m)	160	165	N/A	N/A
Horizontal distance from nearest parking lot (m)	80	85	N/A	N/A
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	163 E, 9	168 E, 9	N/A	N/A
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Located in paved (P) or vegetative (V) ground?	V	V	V	V
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood	N/A	N/A
Applicable NAAQS averaging time(s)	3-month	N/A	N/A	N/A
Sampling season	12 months	12 months	12 months	12 months
Site type[1]	QC	2	N/A	N/A
Purpose of Monitor[2]	QC	4	N/A	N/A
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A
DATA QUALITY				
Last PEP	N/A	N/A	N/A	N/A
Last NPAP	N/A	N/A	N/A	N/A
Date of last annual independent performance audit (AQMS)	6/16/16, 11/16/16	6/16/16, 11/16/16	11/16/16	5/20/16
Frequency of flow rate verification (automated PM)	N/A	N/A	N/A	N/A
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	Monthly	N/A	N/A
Dates of last 2 semi-annual flow rate audits (manual $PM_{2.5}$)	N/A	12/7/17; 4/13/18	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	1/3 months	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (Pb)	6/20/17; 12/13/17	N/A	N/A	N/A
Precision & accuracy submitted to AQS	Quarterly	Quarterly	N/A	N/A
Frequency of 1-pt. QC check (gases)	N/A	N/A	N/A	N/A
Frequency of multi-point gas calibration	N/A	N/A	N/A	N/A
Annual data certification submitted	5/1/18	5/1/18	5/1/18	5/1/18
Changes in the next 18 months?	Yes (Pb project ends 2018_Q4)	None	None	None

(KA) Kapolei SLAMS and NCore continued

KA MONITOR INFORMATION (N/A = Not Applicable)				
	WD	**AT**		
POC/FRM or FEM	POC 1	POC 1		
Type of Monitor	NCore	NCore		
AQS parameter code	61104	62101		
Manufacturer	RM Young	RM Young		
Model No.	05103VP	05103VP		
AQS method code	020	020		
Monitoring start date	1/1/2011	1/1/2011		
Monitoring frequency	Continuous	Continuous		
Probe material	N/A	N/A		
Residence time (sec)	N/A	N/A		
Distance between co-located monitors	N/A	N/A		
Analytical laboratory	N/A	N/A		
Location of probe	10m tower	10m tower		
Shelter dimensions	4 x 2.4 x 5	4 x 2.4 x 5		
Horizontal distance from supporting structure (m)	N/A	N/A		
Vertical distance above supporting structure (m)	N/A	N/A		
Height of probe above ground (m)	N/A	N/A		
Distance (m) & direction from drip line of tree(s)	N/A	N/A		
Horizontal distance from edge of nearest traffic lane (m)	N/A	N/A		
Horizontal distance from nearest parking lot (m)	N/A	N/A		
Distance (m) & direction from obstructions on roof, vertical height (m)	N/A	N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A		
Distance (m) & direction from furnace or incineration flues	N/A	N/A		
Unrestricted airflow	360°	360°		
Located in paved (P) or vegetative (V) ground?	V	V		
SITE REPRESENTATIVENESS				
Spatial scale	N/A	N/A		
Applicable NAAQS averaging time(s)	N/A	N/A		
Sampling season	12 months	12 months		
Site type[1]	N/A	N/A		
Purpose of Monitor[2]	N/A	N/A		
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A		
DATA QUALITY				
Last PEP	N/A	N/A		
Last NPAP	N/A	N/A		
Date of last annual independent performance audit (AQMS)	5/20/16	11/16/16		
Frequency of flow rate verification (automated PM)	N/A	N/A		
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits	N/A	N/A		
Frequency of 1-point flow rate verification (Pb)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A		
Precision & accuracy submitted to AQS	N/A	N/A		
Frequency of 1-pt. QC check (gases)	N/A	N/A		
Frequency of multi-point gas calibration	N/A	N/A		
Annual data certification submitted	5/1/18	5/1/18		
Changes in the next 18 months?	None	None		

(PC) PEARL CITY			
AQS: 150032004	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 860 4th St., Pearl City, HI 96782			
Latitude: 21.39283 Longitude: -157.96913			Elevation: 23.1 m MSL
Location Description: This site is located on the roof of the Department of Health's Leeward Health Center in a commercial and highly populated residential area. The station is west of Hawaiian Electric Company's Waiau Generating Station and is approximately 3 miles NW of the Pearl Harbor Naval Complex. This station has been operating since 1994.			



PC TRAFFIC DESCRIPTION			
Type of Roadway	4th St.	Lehua Ave.	Kam. Hwy.
Freeway			
Major Street or Highway		X	X
Local Street or Road	X		
Distance from air intake (m)	50	138	58
Direction from air inlet	S	W	N
Composition of roadway	asphalt	asphalt	asphalt
Number of traffic lanes	2	4	6
Average daily traffic	[2] Estimated: <2,000	15,692 (2002)[1]	57,948 (2007)[1]
Average vehicle speed (est. mph)	20	30	35
Traffic one way or two	2	2	2
Street parking?	Yes	No	No

[1] Source: State of Hawaii Department of Transportation [2] Estimate only, no data available, small side street used by a few local businesses and residences

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(PC) Pearl City continued

PC MONITOR INFORMATION (N/A = Not Applicable)				
	PM_{10}	**$PM_{2.5}$**		
POC/FRM or FEM	3/FEM	4/FEM		
Type of Monitor	SLAMS	SLAMS		
AQS parameter code	81102	88101		
Manufacturer	Met One	Met One		
Model No.	BAM1020	BAM 1020		
AQS method code	122	170		
Monitoring start date	9/29/2007	1/10/2009		
Monitoring frequency	Continuous	Continuous		
Probe material	N/A	N/A		
Residence time (sec)	N/A	N/A		
Distance between co-located monitors	N/A	N/A		
Analytical laboratory	N/A	N/A		
Location of probe	building roof	building roof		
Building dimensions (H) (m)	12	12		
Horizontal distance from supporting structure (m)	14	14		
Vertical distance above supporting structure (m)	2	2		
Height of probe above ground (m)	14	14		
Distance (m) & direction from drip line of tree(s)	20 E	20 E		
Horizontal distance from edge of nearest traffic lane (m)	58	58		
Horizontal distance from nearest parking lot (m)	N/A	N/A		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	14 S, 6	14 S, 6		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A		
Distance (m) & direction from furnace or incineration flues	N/A	N/A		
Unrestricted airflow	360°	360°		
Located in paved (P) or vegetative (V) ground?	P	P		
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood		
Applicable NAAQS averaging time(s)	24-hr	24-hr, annual		
Sampling season	12 months	12 months		
Site type[1]	1	1		
Purpose of Monitor[2]	1, 2	1, 2		
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	Yes		
DATA QUALITY				
Last PEP	N/A	6/14/17		
Last NPAP	N/A	N/A		
Date of last annual independent performance audit (AQMS)	7/15/14	7/15/14		
Frequency of flow rate verification (automated PM)	Monthly	Monthly		
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (PM)	6/22/17; 11/14/17	6/22/17; 11/14/17		
Frequency of 1-point flow rate verification (Pb)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A		
Precision & accuracy submitted to AQS	Quarterly	Quarterly		
Frequency of 1-pt. QC check (gases)	N/A	N/A		
Frequency of multi-point gas calibration	N/A	N/A		
Annual data certification submitted	5/1/18	5/1/18		
Changes in the next 18 months?	None	None		

(SI) SAND ISLAND			
AQS: 150031004	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 1039 Sand Island Parkway, Honolulu, HI 96819			
Latitude: 21.30384 Longitude: -157.87117			Elevation: 5.3 m MSL
Location Description: Station is located in the University of Hawaii's Anuenue Fisheries near the entrance to the Sand Island Recreational Area. Sand Island is downwind of downtown Honolulu, across from Honolulu Harbor. This station has been operating since 1980.			

SI TRAFFIC DESCRIPTION	
Type of Roadway	Sand Island Parkway
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	37
Direction from air inlet	W
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	1610 (2007)[1]
Average vehicle speed (est. mph)	30
Traffic one way or two	2
Street parking?	No
[1] Source: State of Hawaii Department of Transportation	

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(SI) Sand Island continued

SI MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$	**O_3**		
POC/FRM or FEM	2/FEM	2/FRM		
Type of Monitor	SLAMS	SLAMS		
AQS parameter code	88101	44201		
Manufacturer	Met One	TECO		
Model No.	BAM1020	49C		
AQS method code	170	047		
Monitoring start date	1/1/2009	1/1/1980		
Monitoring frequency	Continuous	Continuous		
Probe material	N/A	Glass		
Residence time (sec)	N/A	18.3		
Distance between co-located monitors	N/A	N/A		
Analytical laboratory	N/A	N/A		
Location of probe	shelter roof	shelter roof		
Shelter dimensions (H x W x D) (m)	3x2x5	3x2x5		
Horizontal distance from supporting structure (m)	N/A	N/A		
Vertical distance above supporting structure (m)	1.1	2		
Height of probe above ground (m)	4.1	5		
Distance (m) & direction from drip line of tree(s)	20 E	20 E		
Horizontal distance from edge of nearest traffic lane (m)	37	37		
Horizontal distance from nearest parking lot (m)	40	40		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	14 N, 5.5	14 N, 5.5		
Distance (m) & direction from furnace or incineration flues	N/A	N/A		
Unrestricted airflow	360°	360°		
Located in paved (P) or vegetative (V) ground?	V	V		
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood		
Applicable NAAQS averaging time(s)	24-hr, annual	8-hr		
Sampling season	12 months	12 months		
Site type[1]	5	1		
Purpose of Monitor[2]	1, 2	1, 2, 3		
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Y	N/A		
DATA QUALITY				
Last PEP	10/15/17	N/A		
Last NPAP	N/A	6/14/17		
Date of last annual independent performance audit (AQMS)	N/A	9/20/17		
Frequency of flow rate verification (automated PM)	Monthly	N/A		
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (PM)	4/13/17; 11/7/17	N/A		
Frequency of 1-point flow rate verification (Pb)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A		
Precision & accuracy submitted to AQS	Quarterly	Quarterly		
Frequency of 1-pt. QC check (gases)	N/A	Weekly		
Frequency of multi-point gas calibration	N/A	60 days		
Annual data certification submitted	5/1/18	5/1/18		
Changes in the next 18 months?	Yes (upgrade to BAM 1022)	None		

(KH) KIHEI			
AQS: 150090006	Type: SLAMS	County: Maui	MSA: Maui
Address: TMK 2-3-9-4:28 Hale Piilani Park, Kihei, HI 96753			
Latitude: 20.780997	Longitude: -156.44637		Elevation: 46.5 m MSL
Location Description: This station is located in the Hale Piilani subdivision's park in upper Kihei and surrounded primarily by agricultural land. The station was established to monitor the effects of sugar cane burning. This station has been operating since 1999 monitoring for particulates.			

KH TRAFFIC DESCRIPTION		
Type of Roadway	Kaiolohia	Kaiwahine
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	114	118
Direction from air inlet	NW	S
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	2
Average daily traffic	[1] Estimated <3,000	[1] Estimated <3,000
Average vehicle speed (est. mph)	25	25
Traffic one way or two	2	2
Street parking?	Yes	Yes
[1] Estimated only, no data available, roads are for local residential access		

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(KH) Kihei continued

KH MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$			
POC/FRM or FEM	2/FEM			
Type of Monitor	SLAMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM1020			
AQS method code	170			
Monitoring start date	12/1/2008			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	shelter roof			
Shelter dimensions (H x W x D) (m)	4 x 2 x 5			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	1			
Height of probe above ground (m)	5			
Distance (m) & direction from drip line of tree(s)	19.2 N			
Horizontal distance from edge of nearest traffic lane (m)	154.5			
Horizontal distance from nearest parking lot (m)	105.2			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	360°			
Located in paved (P) or vegetative (V) ground?	V			
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type[1]	3			
Purpose of Monitor[2]	1, 2, 4			
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Y			
DATA QUALITY				
Last PEP	10/10/17			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	1/9/18; 5/8/18			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	5/1/18			
Changes in the next 18 months?	None			

(KL) KAHULUI			
AQS: 150090025	Type: SPMS	County: Maui	MSA: Maui
Address: TMK 2-3-8-007-153 Mauilani Parkway, Kahului, HI 96732			
Latitude: 20.869444	Longitude: -156.492417		Elevation: 55.5 m MSL
Location Description: This station is located off of Mauilani Parkway in Kahului and surrounded primarily by residential land. The station was established to measure typical concentrations of air pollutants in areas of high population density. This station began monitoring for $PM_{2.5}$ on January 13, 2015.			

KL TRAFFIC DESCRIPTION	
Type of Roadway	Mauilani Parkway
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	80
Direction from air inlet	S
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	<1500[1]
Average vehicle speed (est. mph)	30
Traffic one way or two	2
Street parking?	No
[1] Estimate only, no data available, local road	

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(KL) Kahului continued

KL MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM 1020			
AQS method code	170			
Monitoring start date	1/13/2015			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	stand-alone PM shelter			
Shelter dimensions (H x W x D) (m)	1.8x1.1x0.6			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	N/A			
Height of probe above ground (m)	2.7			
Distance (m) & direction from drip line of tree(s)	N/A			
Horizontal distance from edge of nearest traffic lane (m)	70			
Horizontal distance from nearest parking lot (m)	N/A			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	2.5 S, 3.6			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	360°			
Located in paved (P) or vegetative (V) ground?	P			
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type[1]	2, 3			
Purpose of Monitor[2]	1, 2, 4			
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Yes			
DATA QUALITY				
Last PEP	10/10/17			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	11/3/17; 5/8/18			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	5/1/18			
Changes in the next 18 months?	None			

(NI) NIUMALU			
AQS: 150070007	Type: SPMS	County: Kauai	MSA: Not in a MSA
Address: 2342 Hulemalu Rd., Lihue, HI 96766			
Latitude: 21.9495 Longitude: -159.365			Elevation: 11 m MSL
Location Description: Located on a private residential property approximately 1 mile downwind of Nawiliwili Harbor, this station was established to monitor the impact of cruise ship emissions on nearby communities. With the new lower ECA fuel sulfur requirements for cruise ships, this station provides information on the effects of lowered fuel sulfur on ambient SO_2. This station began operating in April 2011.			

NI TRAFFIC DESCRIPTION		
Type of Roadway	Hulemalu Rd.	Niumalu Rd.
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	44.4	309.7
Direction from air inlet	NW	NE
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	1
Average daily traffic	100 [1]	30 [1]
Average vehicle speed (est. mph)	15	20
Traffic one way or two	2	2
Street parking?	No	No
[1] Estimated only, no data available, roads are for local residential access		

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(NI) Niumalu continued

NI MONITOR INFORMATION (N/A = Not Applicable)				
	SO_2	**NO_2**	**$PM_{2.5}$**	
POC/FRM or FEM	1/FEM	2/FRM	1/FEM	
Type of Monitor	SPMS	SPMS	SPMS	
AQS parameter code	42401	42602	88101	
Manufacturer	TECO	API	Met One	
Model No.	43i	T500U 182	BAM 1020	
AQS method code	060	212	170	
Monitoring start date	4/1/2011	4/1/2011	4/1/2011	
Monitoring frequency	Continuous	Continuous	Continuous	
Probe material	Glass	Glass	N/A	
Residence time (sec)	19.4	19.4	N/A	
Distance between co-located monitors	N/A	N/A	N/A	
Analytical laboratory	N/A	N/A	N/A	
Location of probe	shelter roof	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	3x5x2.4	3x5x2.4	3x5x2.4	
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	
Vertical distance above supporting structure (m)	1	1	1	
Height of probe above ground (m)	4	4	4	
Distance (m) & direction from drip line of tree(s)	17.8 ESE	17.8 ESE	17.8 ESE	
Horizontal distance from edge of nearest traffic lane (m)	44.4	44.4	44.4	
Horizontal distance from nearest parking lot (m)	N/A	N/A	N/A	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	14.6 W, 7.2	14.6 W, 7.2	14.6 W, 7.2	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	
Unrestricted airflow	360°	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	V	
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	1-hr, 3-hr, annual	1-hr, annual	24-hr, annual	
Sampling season	12 months	12 months	12 months	
Site type[1]	3	3	3	
Purpose of Monitor[2]	1, 2, 4	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	Y	
DATA QUALITY				
Last PEP	N/A	N/A	12/12/14	
Last NPAP	2/3/12	2/3/12	N/A	
Date of last annual independent performance audit (AQMS)	11/8/17	11/8/17	N/A	
Frequency of flow rate verification (automated PM)	N/A	N/A	Monthly	
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	N/A	N/A	11/2/17	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	Weekly	Weekly	N/A	
Frequency of multi-point gas calibration	60 days	60 days	N/A	
Annual data certification submitted	5/1/18	5/1/18	5/1/18	
Changes in the next 18 months?	None	None	None	

(HL) HILO			
AQS: 150011006	Type: SLAMS (SO_2); SPMS ($PM_{2.5}$)	County: Hawaii	MSA: Not in a MSA
Address: 1099 Waianuenue Ave., Hilo, HI 96720			
Latitude: 19.71756 Longitude: -155.11053			Elevation: 136.8 m MSL
Location Description: Located on the grounds of the Adult Rehabilitation Center of Hilo, near the Hilo Medical Center, this site was originally established to monitor volcanic emissions during non-prevalent wind conditions. This station has been operating since 1997.			

HL TRAFFIC DESCRIPTION	
Type of Roadway	Waianuenue Ave.
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	20
Direction from air inlet	N
Composition of roadway	Asphalt
Number of traffic lanes	2
Average daily traffic	15,000 [1]
Average vehicle speed (est. mph)	35
Traffic one way or two	2
Street parking?	No
[1] Estimate only, no data available, based on observations	

For "Site Representativeness" in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(HL) Hilo continued

HL MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$	**SO_2**		
POC/FRM or FEM	1/FEM	1/FEM		
Type of Monitor	SPMS	SLAMS		
AQS parameter code	88101	42401		
Manufacturer	Met-One	TECO		
Model No.	BAM 1020	43i		
AQS method code	170	060		
Monitoring start date	5/1/2008	1/1/1997		
Monitoring frequency	Continuous	Continuous		
Probe material	N/A	Glass		
Residence time (sec)	N/A	18.0		
Distance between co-located monitors	N/A	N/A		
Analytical laboratory	N/A	N/A		
Location of probe	shelter roof	shelter roof		
Shelter dimensions (H x W x D) (m)	3x2.4x5	3x2.4x5		
Horizontal distance from supporting structure (m)	N/A	N/A		
Vertical distance above supporting structure (m)	1.7	1		
Height of probe above ground (m)	4.7	4		
Distance (m) & direction from drip line of tree(s)	15 N	15 N		
Horizontal distance from edge of nearest traffic lane (m)	20	20		
Horizontal distance from nearest parking lot (m)	25	25		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A		
Distance (m) & direction from furnace or incineration flues	29 NNW	29 NNW		
Unrestricted airflow	360°	360°		
Located in paved (P) or vegetative (V) ground?	V	V		
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood		
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr, annual		
Sampling season	12 months	12 months		
Site type[1]	3	3		
Purpose of Monitor[2]	1, 2, 4	1, 2, 4		
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Y	N/A		
DATA QUALITY				
Last PEP	6/26/16	N/A		
Last NPAP	N/A	2/10/12		
Date of last annual independent performance audit (AQMS)	N/A	6/7/17		
Frequency of flow rate verification (automated PM)	Monthly	N/A		
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (PM)	5/4/17; 11/8/17	N/A		
Frequency of 1-point flow rate verification (Pb)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A		
Precision & accuracy submitted to AQS	Quarterly	Quarterly		
Frequency of 1-pt. QC check (gases)	N/A	Weekly		
Frequency of multi-point gas calibration	N/A	60 days		
Annual data certification submitted	5/1/18	5/1/18		
Changes in the next 18 months?	Yes (upgrade to BAM 1022)	None		

(KN) KONA			
AQS: 150011012	Type: SLAMS (SO_2) SPMS ($PM_{2.5}$)	County: Hawaii	MSA: Not in a MSA
Address: 81-1043 Konawaena School Rd., Kona, HI 96750			
Latitude: 19.50978 Longitude: -155.91342			Elevation: 517.2 m MSL
Location Description: This station is located on the upper campus of Konawaena High School. It was established to measure impacts from volcanic emissions. The station has been operating at this site since 2005.			

KN TRAFFIC DESCRIPTION		
Type of Roadway	Konawaena School Rd.	Mamalahoa Hwy.
Freeway		
Major Street or Highway		X
Local Street or Road	X	
Distance from air intake (m)	17	702
Direction from air inlet	N	W
Composition of roadway	asphalt	asphalt
Number of traffic lanes	1	2
Average daily traffic	500 [2]	15,503 (2006)[1]
Average vehicle speed (est. mph)	10	55
Traffic one way or two	2	2
Street parking?	No	No

[1] Source: State of Hawaii Department of Transportation
[2] Estimated only, no data available. This is a road used for school access only and station is at the top of the road where there would be less ingress/egress.

For "Site Representativeness" in the following table:

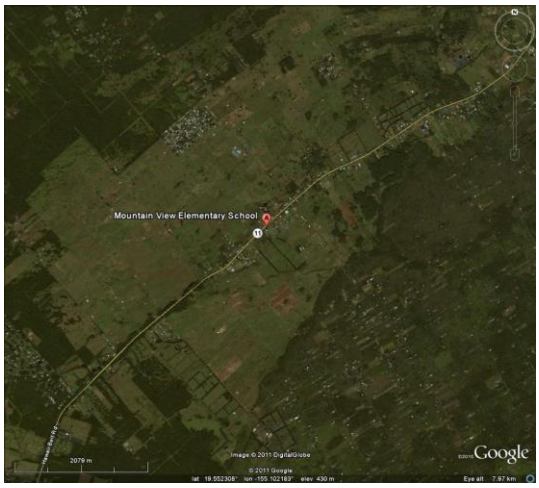
[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(KN) Kona continued

KN MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$ Primary	**$PM_{2.5}$ Co-Lo**	**SO_2**	
POC/FRM or FEM	1/FEM	2/FEM	1/FEM	
Type of Monitor	SPMS	SPMS	SLAMS	
AQS parameter code	88101	88101	42401	
Manufacturer	Met-One	Met-One	TECO	
Model No.	BAM 1020	BAM 1020	43i	
AQS method code	170	170	060	
Monitoring start date	3/15/2008	1/1/2014	9/13/2005	
Monitoring frequency	Continuous	Continuous	Continuous	
Probe material	N/A	N/A	Glass	
Residence time (sec)	N/A	N/A	17.3	
Distance between co-located monitors (m)	4	4	N/A	
Analytical laboratory	N/A	N/A	N/A	
Location of probe	shelter roof	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	3x2.4x5	3x2.4x5	3x2.4x5	
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	
Vertical distance above supporting structure (m)	1	1	1.1	
Height of probe above ground (m)	4	4	4.1	
Distance (m) & direction from drip line of tree(s)	38 NE	38 NE	38 NE	
Horizontal distance from edge of nearest traffic lane (m)	30	30	30	
Horizontal distance from nearest parking lot (m)	N/A	N/A	N/A	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	21 SSW, 9	21 SSW, 9	21 SSW, 9	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	
Unrestricted airflow	360°	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	V	
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	24-hr, annual	1-hr, 3-hr; annual	
Sampling season	12 months	12 months	12 months	
Site type[1]	3	QC	3	
Purpose of Monitor[2]	1, 2, 4	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Y	Y	N/A	
DATA QUALITY				
Last PEP	10/20/16	N/A	N/A	
Last NPAP	N/A	N/A	6/18/14	
Date of last annual independent performance audit (AQMS)	N/A	N/A	6/7/17	
Frequency of flow rate verification (automated PM)	Monthly	Monthly	N/A	
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	6/7/17; 11/28/17	6/7/17; 11/28/17	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	N/A	60 days	
Annual data certification submitted	5/1/18	5/1/18	5/1/18	
Changes in the next 18 months?	None	None	None	

(MV) MOUNTAIN VIEW			
AQS: 150012023	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 18-1235 Volcano Rd., Mt. View, HI 96771			
Latitude: 19.57002 Longitude: -155.08046			Elevation: 436.5 m MSL
Location Description: This station is located on the grounds of the Mt. View Elementary School. The original Mt. View station, which began in December 2007, was moved at the ending of 2010 approximately 1.8 miles southwest to this current location. Due to the proximity of this community to the Kilauea volcano, it was established to monitor volcanic emissions during non-trade wind days.			



	MV TRAFFIC DESCRIPTION
Type of Roadway	Volcano Rd.
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	30.5
Direction from air inlet	N
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	5,207[1] (2006)
Average vehicle speed (est. mph)	40
Traffic one way or two	2
Street parking?	No
[1] Source: State of Hawaii Department of Transportation	

For "Site Representativeness" in the following table:

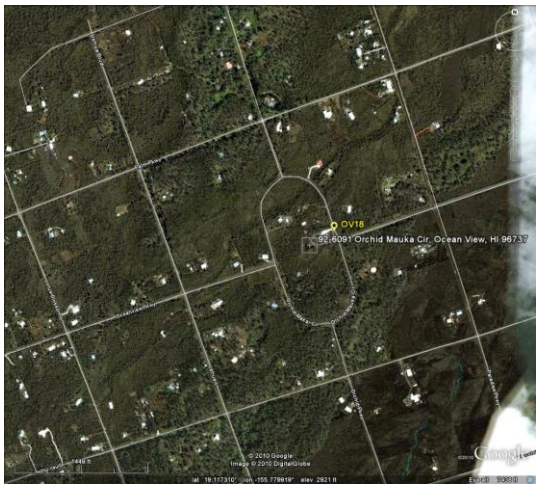
[1]Site Types: 1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes: 1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(MV) Mt. View continued

MV MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$	**SO_2**		
POC/FRM or FEM	1/FEM	1/FEM		
Type of Monitor	SPMS	SPMS		
AQS parameter code	88101	42401		
Manufacturer	Met-One	TECO		
Model No.	BAM 1020	43i		
AQS method code	170	060		
Monitoring start date	12/7/2010	12/8/2010		
Monitoring frequency	Continuous	Continuous		
Probe material	N/A	Glass		
Residence time (sec)	N/A	18.2		
Distance between co-located monitors	N/A	N/A		
Analytical laboratory	N/A	N/A		
Location of probe	shelter roof	shelter roof		
Shelter dimensions (H x W x D) (m)	3x2.4x5	3x2.4x5		
Horizontal distance from supporting structure (m)	N/A	N/A		
Vertical distance above supporting structure (m)	1	1		
Height of probe above ground (m)	4	4		
Distance (m) & direction from drip line of tree(s)	18 W	18 W		
Horizontal distance from edge of nearest traffic lane (m)	30.5	30.5		
Horizontal distance from nearest parking lot (m)	46.5	46.5		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A		
Distance (m) & direction from furnace or incineration flues	N/A	N/A		
Unrestricted airflow	360°	360°		
Located in paved (P) or vegetative (V) ground?	V	V		
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood		
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual		
Sampling season	12 months	12 months		
Site type[1]	3	3		
Purpose of Monitor[2]	1, 2, 4	1, 2, 4		
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Y	N/A		
DATA QUALITY				
Last PEP	N/A	N/A		
Last NPAP	N/A	2/13/12		
Date of last annual independent performance audit (AQMS)	N/A	3/20/17		
Frequency of flow rate verification (automated PM)	Monthly	N/A		
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (PM)	5/3/17; 11/9/17	N/A		
Frequency of 1-point flow rate verification (Pb)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A		
Precision & accuracy submitted to AQS	Quarterly	Quarterly		
Frequency of 1-pt. QC check (gases)	N/A	Weekly		
Frequency of multi-point gas calibration	N/A	60 days		
Annual data certification submitted	5/1/18	5/1/18		
Changes in the next 18 months?	None	None		

(OV) OCEAN VIEW			
AQS: 150012020	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 92-6091 Orchid Mauka Circle, Ocean View, HI 96737			
Latitude: 19.11756 Longitude: -155.77814			Elevation: 862.6 m MSL
Location Description: This station established in 2010 is located on the grounds of the Ocean View Fire Station. During normal trade-winds, volcanic emissions are carried into this residential/agricultural community.			



OV TRAFFIC DESCRIPTION	
Type of Roadway	Orchid Mauka Circ.
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	13.6
Direction from air inlet	ENE
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	< 3,000 [1]
Average vehicle speed (est. mph)	25
Traffic one way or two	2
Street parking?	No
[1] Estimated only, local residential street, no data available	

For “Site Representativeness” in the following table:

[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(OV) Ocean View continued

OV MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$	**SO_2**		
POC/FRM or FEM	1/FEM	1/FEM		
Type of Monitor	SPMS	SPMS		
AQS parameter code	88101	42401		
Manufacturer	Met-One	TECO		
Model No.	BAM 1020	43i		
AQS method code	170	060		
Monitoring start date	4/1/2010	4/1/2010		
Monitoring frequency	Continuous	Continuous		
Probe material	N/A	Glass		
Residence time (sec)	N/A	18.3		
Distance between co-located monitors	N/A	N/A		
Analytical laboratory	N/A	N/A		
Location of probe	shelter roof	shelter roof		
Shelter dimensions (H x W x D) (m)	3x2.4x5	3x2.4x5		
Horizontal distance from supporting structure (m)	N/A	N/A		
Vertical distance above supporting structure (m)	1	1.1		
Height of probe above ground (m)	4	4.1		
Distance (m) & direction from drip line of tree(s)	N/A	N/A		
Horizontal distance from edge of nearest traffic lane (m)	13.6	13.6		
Horizontal distance from nearest parking lot (m)	6.4	6.4		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A		
Distance (m) & direction from furnace or incineration flues	N/A	N/A		
Unrestricted airflow	360°	360°		
Located in paved (P) or vegetative (V) ground?	V	V		
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood		
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual		
Sampling season	12 months	12 months		
Site type[1]	3, 6	3, 6		
Purpose of Monitor[2]	1, 2, 4	1, 2, 4		
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Y	N/A		
DATA QUALITY				
Last PEP	6/22/14	N/A		
Last NPAP	N/A	2/9/12		
Date of last annual independent performance audit (AQMS)	N/A	4/4/17		
Frequency of flow rate verification (automated PM)	Monthly	N/A		
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (PM)	5/3/17; 11/8/17	N/A		
Frequency of 1-point flow rate verification (Pb)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A		
Precision & accuracy submitted to AQS	Quarterly	Quarterly		
Frequency of 1-pt. QC check (gases)	N/A	Weekly		
Frequency of multi-point gas calibration	N/A	60 days		
Annual data certification submitted	5/1/18	5/1/18		
Changes in the next 18 months?	None	None		

(PA) PAHALA			
AQS: 150012016	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 96-3150 Pikake St., Pahala, HI 96777			
Latitude: 19.2039 Longitude: -155.48018			Elevation: 320 m MSL
Location Description: This station is located on the grounds of the Ka'u High/Pahala Elementary School. During normal trade-winds, volcanic emissions are carried into this rural community. The station began operating in 2007.			

PA TRAFFIC DESCRIPTION		
Type of Roadway	Puahala	Pumeli
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	226	61
Direction from air inlet	E	N
Composition of roadway	Asphalt	Asphalt
Number of traffic lanes	2	2
Average daily traffic	< 3,000 [1]	< 3,000 [1]
Average vehicle speed (est. mph)	25 mph	25 mph
Traffic one way or two	2	2
Street parking?	No	No
[1] Estimated only, no data available. Local roads for a community with a 2010 population of about 1,400		

For "Site Representativeness" in the following table:

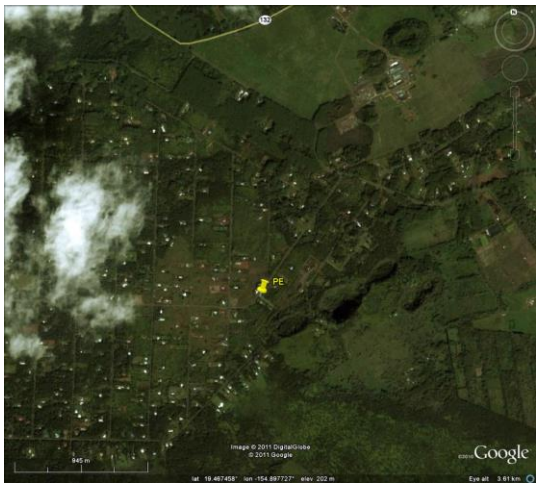
[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(PA) Pahala continued

PA MONITOR INFORMATION (N/A = Not Applicable)				
	$PM_{2.5}$	**SO_2**		
POC/FRM or FEM	1/FEM	1/FEM		
Type of Monitor	SPMS	SPMS		
AQS parameter code	88101	42401		
Manufacturer	Met-One	TECO		
Model No.	BAM 1020	43i		
AQS method code	170	060		
Monitoring start date	4/11/2008	8/10/2007		
Monitoring frequency	Continuous	Continuous		
Probe material	N/A	Glass		
Residence time (sec)	N/A	17.9		
Distance between co-located monitors	N/A	N/A		
Analytical laboratory	N/A	N/A		
Location of probe	shelter roof	shelter roof		
Shelter dimensions (H x W x D) (m)	2.4x2.4x6	2.4x2.4x6		
Horizontal distance from supporting structure (m)	N/A	N/A		
Vertical distance above supporting structure (m)	1	1		
Height of probe above ground (m)	3.4	3.4		
Distance (m) & direction from drip line of tree(s)	11 N	11 N		
Horizontal distance from edge of nearest traffic lane (m)	48	48		
Horizontal distance from nearest parking lot (m)	73	73		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A		
Distance (m) & direction from furnace or incineration flues	N/A	N/A		
Unrestricted airflow	360°	360°		
Located in paved (P) or vegetative (V) ground?	V	V		
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood	Neighborhood		
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual		
Sampling season	12 months	12 months		
Site type[1]	3	3		
Purpose of Monitor[2]	1, 2, 4	1, 2, 4		
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	Y	N/A		
DATA QUALITY				
Last PEP	6/26/16	N/A		
Last NPAP	N/A	6/18/14		
Date of last annual independent performance audit (AQMS)	N/A	4/4/17		
Frequency of flow rate verification (automated PM)	Monthly	N/A		
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (PM)	5/4/17; 11/8/17	N/A		
Frequency of 1-point flow rate verification (Pb)	N/A	N/A		
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A		
Precision & accuracy submitted to AQS	Quarterly	Quarterly		
Frequency of 1-pt. QC check (gases)	N/A	Weekly		
Frequency of multi-point gas calibration	N/A	60 days		
Annual data certification submitted	5/1/18	5/1/18		
Changes in the next 18 months?	None	None		

(PE) PUNA E			
AQS: 150012010	Type: SPMS **Non-regulatory**	County: Hawaii	MSA: Not in a MSA
Address: 13-763 Leilani Ave., Pahoa, HI			
Latitude: 19.46399 Longitude: -154.89871			Elevation: 207.9 m MSL
Location Description: Located on a residential property in Leilani Estates, this station is primarily to monitor emissions from the nearby geothermal energy facility. In 2005, an SO_2 monitor was added to measure any effects from volcanic emissions. However, since this is primarily an H_2S site, the probe is at breathing height, below EPA requirements and is therefore non-regulatory for SO_2.			



PE TRAFFIC DESCRIPTION	
Type of Roadway	Leilani Blvd.
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	25.6
Direction from air inlet	NE
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	< 5,000 [1]
Average vehicle speed (est. mph)	25
Traffic one way or two	2
Street parking?	Yes
[1] Estimated, no data available, residential street	

For "Site Representativeness" in the following table:

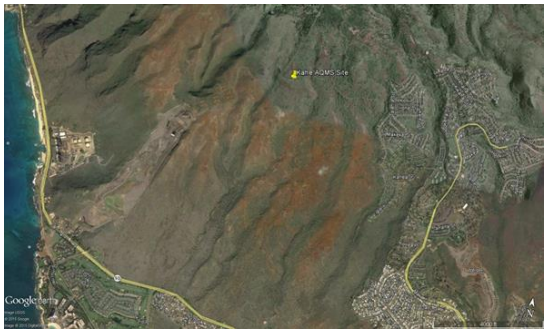
[1]Site Types:
1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes:
1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(PE) Puna E continued

PE MONITOR INFORMATION (N/A = Not Applicable)				
	H_2S			
POC/FRM or FEM	N/A			
Type of Monitor	SPMS			
AQS parameter code	N/A			
Manufacturer	TECO			
Model No.	43i			
AQS method code	N/A			
Monitoring start date	3/1991			
Monitoring frequency	Continuous			
Probe material	Teflon			
Residence time (sec)	3.9			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	shelter roof			
Shelter dimensions (H x W x D) (m)	3x2.4x5			
Horizontal distance from supporting structure (m)	1.2			
Vertical distance above supporting structure (m)	N/A, probe is on side of shelter			
Height of probe above ground (m)	1.8			
Distance (m) & direction from drip line of tree(s)	17 SW			
Horizontal distance from edge of nearest traffic lane (m)	26			
Horizontal distance from nearest parking lot (m)	N/A			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	270°			
Located in paved (P) or vegetative (V) ground?	V			
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	1-hr state standard 25 ppb			
Sampling season	12 months			
Site type[1]	3			
Purpose of Monitor[2]	1, 4			
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A			
DATA QUALITY				
Last PEP	N/A			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	4/12/18			
Frequency of flow rate verification (automated PM)	N/A			
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	N/A			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	Weekly			
Frequency of multi-point gas calibration	60 days			
Annual data certification submitted	N/A			
Changes in the next 18 months?	None			

KAHE (Data Requirements Rule)			
AQS: 150034001	Type: SPMS	County: Honolulu	MSA: Honolulu
Address: Palehua Road, Makakilo, Oahu			
Latitude: 21.3678 Longitude: -158.1053			Elevation: 388 m MSL
Location Description: This station is located on the hillside south of Palehua Road and overlooks the Pacific Ocean. The area around the station is undeveloped and is currently used for cattle grazing. The station is approximately 2.7 kilometers northeast of the Kahe Generating Station. The city of Makakilo is located to the east and southeast. The areas immediately to the west through north are undeveloped.			



TRAFFIC DESCRIPTION			
Type of Roadway	Palehua Road	Farrington Highway	
Freeway			
Major Street or Highway	X	X	
Distance from air intake (m)	12.8	2,750	
Direction from air inlet	N	SW	
Composition of roadway	asphalt	asphalt	
Number of traffic lanes	1	4	
Average daily traffic	20 (estimate)	52,300[1]	
Average vehicle speed (est. mph)	15	40	
Traffic one way or two	2	2	
Street parking?	No	No	
[1] Source: State of Hawaii Department of Transportation 2015 count			

For “Site Representativeness” in the following table:

[1]Site Types: 1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes: 1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(KE) Kahe continued

KAHE MONITOR INFORMATION (N/A = Not Applicable)				
	SO_2			
POC/FRM or FEM	FEM			
Type of Monitor	SPMS			
AQS parameter code	42401			
Manufacturer	Thermo Scientific			
Model No.	43i-TLE			
AQS method code	060			
Monitoring start date	12/16/2016			
Monitoring frequency	Continuous			
Probe material	Borosilicate glass or inert PTFE			
Residence time (sec)	Less than 15			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	Shelter roof			
Building dimensions (H) (m)	3.3			
Horizontal distance from supporting structure (m)	0			
Vertical distance above supporting structure (m)	1.0			
Height of probe above ground (m)	4.3			
Distance (m) & direction from drip line of tree(s))	N/A			
Horizontal distance from edge of nearest traffic lane (m)	12.8			
Horizontal distance from nearest parking lot (m)	N/A			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A			
Distance (m) & direction from furnace or incineration flues	2,740 SW			
Unrestricted airflow	360°			
Located in paved (P) or vegetative (V) ground?	V			
SITE REPRESENTATIVENESS				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	1-hr			
Sampling season	12 months			
Site type[1]	3			
Purpose of Monitor[2]	2, 3			
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A			
DATA QUALITY				
Last PEP	N/A			
Last NPAP	NA			
Date of last annual independent performance audit	12/6/17			
Frequency of flow rate verification (automated PM)	N/A			
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	N/A			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	N/A			
Frequency of 1-pt. QC check (gases)	Biweekly			
Frequency of multi-point gas calibration	Quarterly			
Annual data certification submitted	N/A			
Changes in the next 18 months?	None			

WAIAU (Data Requirements Rule)			
AQS: 150034100	Type: SPMS	County: Honolulu	MSA: Honolulu
Address: 689 Kamehameha Highway, Pearl City, Oahu			
Latitude: 21.3909 Longitude: -157.9653			Elevation: 7 m MSL
Location Description: This station is located in an urban area and is approximately 400 meters northwest of the Waiau Power Generating Station in, Pearl City, Oahu. The station is surrounded by a residential area to the north, the H-1 Freeway from the east to southwest and the business district to the west.			

TRAFFIC DESCRIPTION			
Type of Roadway	H-1	Kamehameha Highway	
Freeway	X		
Major Street or Highway		X	
Distance from air intake (m)	59	114	
Direction from air inlet	SSE	NE	
Composition of roadway	Concrete	Asphalt	
Number of traffic lanes	6	4	
Average daily traffic	231,589[1]		
Average vehicle speed (est. mph)	55	35	
Traffic one way or two	2	2	
Street parking?	No	No	
[1] Source: State of Hawaii Department of Transportation 2015 count			

For “Site Representativeness” in the following table:

[1]Site Types: 1) located to determine the highest concentrations;
2) located to measure typical concentrations in areas of high population density;
3) located to determine the impact of significant sources or source categories on air quality;
4) located to determine general background concentration levels;
5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

[2] Purposes: 1) Provide air pollution data to the general public in a timely manner;
2) Support compliance with ambient air quality standards;
3) Support emissions strategy development and track trends in air pollution abatement control measures;
4) Support for air pollution research

(WI) Waiau continued

WAIAU MONITOR INFORMATION (N/A = Not Applicable)				
	SO_2			
POC/FRM or FEM	FEM			
Type of Monitor	SLAMS			
AQS parameter code	42401			
Manufacturer	Thermo Scientific			
Model No.	43i-TLE			
AQS method code	060			
Monitoring start date	12/12/16			
Monitoring frequency	Continuous			
Probe material	Borosilicate glass or inert PTFE			
Residence time (sec)	Less than 15			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	Shelter roof			
Building dimensions (H) (m)	3.3			
Horizontal distance from supporting structure (m)	0			
Vertical distance above supporting structure (m)	1.0			
Height of probe above ground (m)	4.3			
Distance (m) & direction from drip line of tree(s)	20 WSW, 36 SSW			
Horizontal distance from edge of nearest traffic lane (m)	59			
Horizontal distance from nearest parking lot (m)	30			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	23 NNW, 5			
Distance (m) & direction from furnace or incineration flues	415 SE			
Unrestricted airflow	360			
Located in paved (P) or vegetative (V) ground?	V			
SITE REPRESENTATIVENESS				
Spatial scale	neighborhood			
Applicable NAAQS averaging time(s)	1-hr			
Sampling season	12 months			
Site type[1]	3			
Purpose of Monitor[2]	2, 3			
Suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A			
DATA QUALITY				
Last PEP	N/A			
Last NPAP	N/A			
Date of last annual independent performance audit	12/6/17			
Frequency of flow rate verification (automated PM)	N/A			
Frequency of flow rate verification (manual $PM_{2.5}$)	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	N/A			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	N/A			
Frequency of 1-pt. QC check (gases)	Biweekly			
Frequency of multi-point gas calibration	Quarterly			
Annual data certification submitted	N/A			
Changes in the next 18 months?	None			

Appendix A

Public Notice Documentation

The 2018 Network Plan was made available for public viewing on the Clean Air Branch web site as well at the following Department of Health locations:

- Clean Air Branch, 2827 Waimano Home Road, Rm. 130, Pearl City, Oahu
- Kauai District Health Office, Department of Health, 3040 Umi St., Lihue, Kauai
- Maui District Health Office, Department of Health, 54 High St., Rm. 300, Wailuku, Maui
- Hawaii District Health Office, Department of Health, 1582 Kamehameha Ave., Hilo, Hawaii
- Clean Air Branch-Kona, Keakealani Building, Department of Health, 79-1020 Haukapila St., Rm. 115, Kealakekua, Hawaii

Public notification of the availability of the Plan for public inspection was published in the major newspapers on all counties. The public comment period was for 30 days from May 28 to June 27, 2018.

The public notice was published in the following newspapers for the following counties:

- Kauai County: The Garden Island
- City and County of Honolulu: The Star Advertiser
- Maui County: The Maui News
- Hawaii County: West Hawaii Today and Hawaii Tribune Herald (East Hawaii)

Documentations of the public notice are attached.

No comments to the plan were received.